# THE OIL WEEKLY

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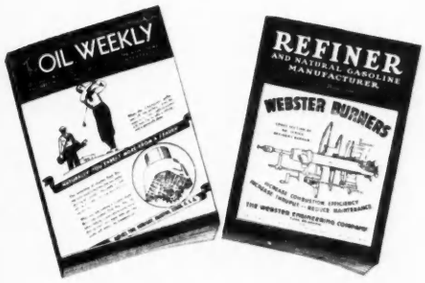


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## The Oil Man's Calendar

| | |
|---|---|
| **DEC.** | |
| **28-30** | **American Chemical Society, Organic Division, Richmond, Va.** |
| **1938** | |
| **FEB.** | |
| **14-15** | **Kansas Oil Men's Association, Annual Convention and Exposition, Hotel Broadview, Wichita.** |
| **14-18** | **American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.** |
| **17-18** | **Mid-Continent District, American Petroleum Institute, Division of Production, Herring Hotel, Amarillo, Texas.** |
| **MAR.** | |
| **16-18** | **Annual Meeting, American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La.** |
| **24-25** | **Southwestern District, A.P.I. Division of Production, Spring Meeting, Blackstone Hotel, Fort Worth, Texas** |
| **APR.** | |
| **28-29** | **American Petroleum Institute, Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pennsylvania.** |
| **MAY** | |
| **11-13** | **Natural Gasoline Association of America, Hotel Tulsa, Tulsa.** |
| **12-14** | **National Oil Scouts Association of America, Tulsa, Oklahoma.** |
| **14-21** | **International Petroleum Exposition, Tulsa, Oklahoma.** |
| **23-25** | **American Petroleum Institute, Eighth Mid-Year Meeting, Wichita, Kansas.** |
| | **American Gas Association, Natural Gas Department, New Orleans, La.** |

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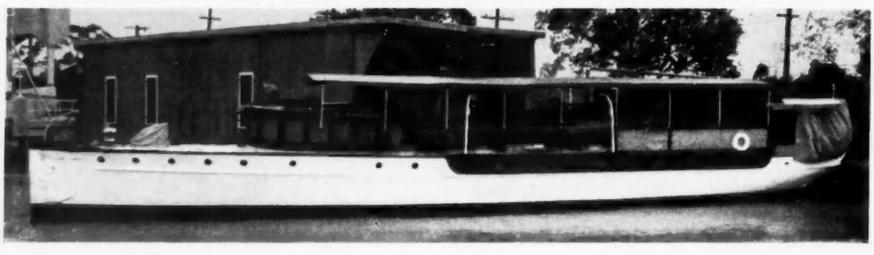

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# LOOKING AHEAD

## WITH THE EDITOR

**Annual Editorial Index . . .**

**Series of Pumping Articles . . .**

DON'T be left in the lurch! Each year we receive thousands of letters asking us what issue of THE OIL WEEKLY carried such and such an article. By the time we answer the question, the issue involved often is sold out.

So—just remember that your OIL WEEKLY for January 3 will carry a full editorial index, by subject, title and author, of all technical, feature, and general interest items, published in 1937. If you need back copies, get your request in early, or be prepared to receive the "sold out" answer later on.

The editorial index will be printed as an integral part of the book so you will not lose it. But remember to hang on to it, because the chances are that if you are a technical man you will need it before Santa Claus visits again.

"YEAH, it's a good paper on pumping, but it doesn't apply to my lease. Conditions are different here, and John's theories simply don't hold water when you stack 'em up against the corrosive agents and reservoir conditions in this field."

Those words, or others to the same effect, have condemned the usefulness of many an otherwise excellent paper on pumping problems.

Thus, The OIL WEEKLY is proud to announce that an early issue will carry Part I of a three-part thesis dealing with a number of new methods and procedures pioneered throughout the country in the past several months by conscientious operators to obtain efficient and trouble-free operation of sub-surface pumping under normal or extremely adverse subterranean conditions. Don E. Schnobrich, engineer, is the author.

# The changing panorama

SOME members of Congress themselves were responsible for designation of the recently adjourned special session of that body as the "goose egg session." The phrase voiced the fact no legislation of importance was sent to the White House, although the farm and housing bills were put into form for early action at the forthcoming regular session.

### Nuisance Taxes Mostly Undisturbed

Among the things that the law makers did NOT legislate was elimination of the 1 cent federal tax on gasoline, although the house tax sub-committee recommended repeal of some of the excise and nuisance taxes, that yield relatively small revenue and are costly to collect. In the latter group was the ⅛-cent a barrel tax on crude oil intended to pay cost of administering the Connally hot oil act.

Among the levies the committee decided not to disturb are the mentioned 1 cent tax on gasoline, juicy levy yielding $190,000,000 a year and taxes on new automobiles, trucks, accessories, tires, tubes, lubricating oil, telegraph and telephone messages, and oil imports. Altogether, these various taxes have been yielding around $650,000,000 a year. They were levied originally in 1932 as temporary taxes, but have been extended repeatedly.

It is worthy of note here that the petroleum and automotive industries are leaned upon heavily for these sources of revenue.

This is one of the reasons why the oil industry does much howling about a heavy and increasing tax burden.

There is one consolation regarding the "do nothing" session of Congress. Since the law makers did nothing, it follows that they did no damage.

In some past years, many business men would have considered a "goose egg session" a real achievement.

However, time having marched on, business actually looked with some hopefulness on the convening of the recent special session. For the current business set-back put business in a praying mind, and it did some of its praying to Congress.

In view of this new faith placed in the law making body, therefore, the special session was to some extent a disappointment.

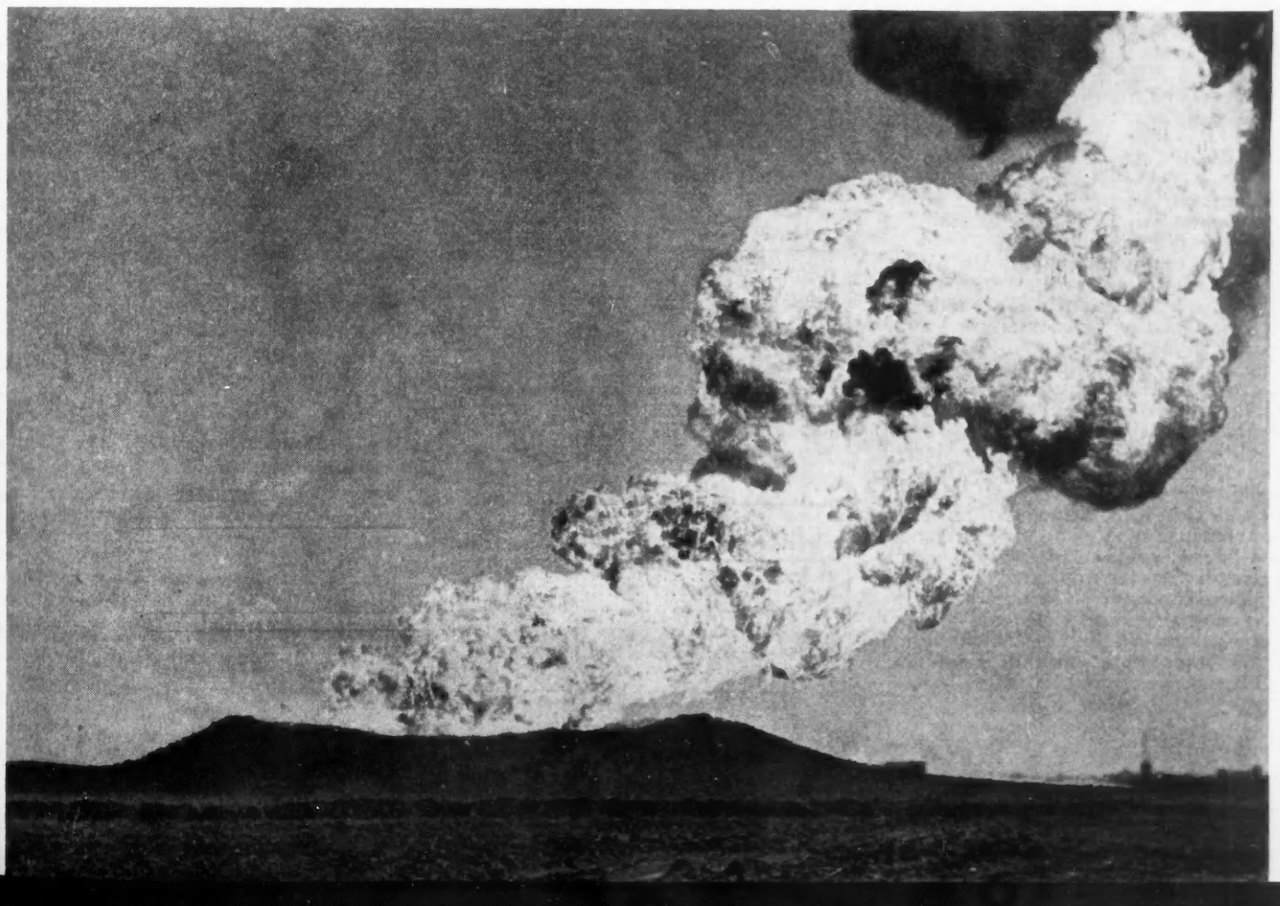
### Some Encouragement Offered

Nevertheless, Congress did not entirely disappoint. It fulfilled, at least partially, the hopes of the many business men who had begun to anticipate more conservative policies at the Capitol. The Congress declined, for instance, to accept the controversial wage and hour bill, which typified further aims toward federal control of business.

From the session, therefore, business men gained a measure of confidence, one element that has remained comparatively rare even in the past few years of better times.

### Less Labor Unsettlement

Settlement last week of the strike that has kept 1400 employes of Shell Petroleum Corporation at



This spectacular cratered well near Corpus Christi is moving a lot of dirt. The mound of dirt shown circling the well rose 21 feet in nine days. It is 75 to 100 feet across the circle. Meanwhile, a lot of valuable production is being lost.

—Paul R. Clegg

Houston idle a month leaves the industry without any important strikes.

The industry escaped serious labor difficulties in 1937, despite the fact that the year was one of great unrest in labor ranks. The industry's favorable showing undoubtedly resulted in considerable part from the fact it has consistently provided its workers better than average wages and working conditions.

It probably is a good guess that there will be even less labor difficulty in the industry in 1938 than in 1937. For the business slump has sobered labor in general, and oil workers probably will be quite reasonable in any demands. Furthermore, the comparatively large oil consumption in prospect for the coming year will help bolster the industry's volumes of business, markets, and wage-paying ability. If the oil companies can maintain good volumes of business and fair earnings, they will not be hard to get along with.

### Past Year Brought New Records

In a year-end statement to the press, Axtell J. Byles, president of the American Petroleum Institute, pointed out that 1937 was a year of new records for the petroleum industry of the United States. The country's motorists, numbering about 30 million, he said, consumed a record quantity of gasoline.

"Employment and pay rolls improved," he continued. "Generally speaking, the industry's employes continued to be among the highest-paid industrial workers.

"Relatively stable crude oil prices and continuing large production brought a measure of prosperity to the oil producing areas. Domestic crude oil production for 1937 is estimated at 1,280,000,000 barrels as against 1,098,516,000 barrels in 1936, until now the all-time peak year. Approximately 7,000 more wells were drilled in 1937 than in 1936. Total completions, estimated at 32,500 wells, were only slightly fewer than in the record year, 1920. Of these wells, 26,200 were productive of either oil or natural gas.

"Production, discoveries, and completions were such during the year that reserves of petroleum in the United States remain at a satisfactory level. Improvements in drilling and production technique, the restoration of older fields, and prolongation of the productive life of newer oil areas, plus the functioning of state conservation laws under the guidance of the state officials aided by the Interstate Compact Commission, augur well for the future.

"Additional confidence may be found," continued Mr. Byles, "in progress in the science of refining, with more and better refined products being obtained from given quantities of crude. During 1937, with demands at new peaks, refiners ran to stills 1,180,000,000 barrels of crude oil, or only slightly more than 100,000,000 barrels above 1936. Crude oil stocks, as of December 31, 1937, are estimated at 315,000,000 barrels, up about 10 percent from 1936, and some 120,000,000 barrels below the all-time peak, October 31, 1929."

## Drilling

A WILDCAT on Wilson Creek structure, 30 miles southwest of Craig, Colorado, flowed 50 barrels per hour from Morrison formation at 6700 feet to be heralded as the most important Rocky Mountain strike for 1937. It may cause 400 new starts.

Three miles south of Olney, Illinois, a wildcat yielded 30 barrels an hour to open a new field or extend Olney field.

In New Mexico, a wildcat between Skelly and Mattix fields showed for a producer, and another, a mile south of Eunice, points to a natural flowing well.

In West Texas a 1¼-mile extension for Wasson was chalked up and a wildcat in northwest Yoakum County, structurally high, logged a stain of oil in the big lime.

In California a Santa Maria Valley outpost was good for 1000 barrels per day and a completion in the northwest extension of Long Beach assured additional drilling.

In the Louisiana Gulf Coast, chances are Bateman Bay may prove the deepest field. Two new fields loom in La Fourche Parish.

South Texas added several deeper sands in proven fields, some of them in fields in which upper horizons had been depleted. Stratton got an 8600-foot extension of one of its sands; Alta Mesa was extended also; a well in North Sweden indicated the upper Cockfield underlies practically all the producing structure. Cole sand production was proved in Las Animas field and another well south of Cole field will open a new pool.

## Market briefs

**Outlook**—Conditions likely to continue unsettled.

**Crude Markets**—Still holding.

**Refined Oil Markets**—Gasoline prices still sagging.

**CURRENT OPERATIONS**

| Week Ended | Daily Crude Production | Daily Crude Runs to Stills |
|---|---|---|
| December 18 | 3,439,850 | 3,220,000 |
| Previous week | 3,414,450 | 3,200,000 |
| Year ago | 3,145,700 | 2,990,000 |

**CRUDE STOCKS**

| Date | Crude Oil (Barrels) |
|---|---|
| December 11 | 303,163,000 |
| Week ago | 303,034,000 |
| Year ago | 287,909,000 |

**REFINED OIL STOCKS**

| Date | Gasoline (Barrels) | Gas & Fuel Oil (Barrels) |
|---|---|---|
| December 18 | 73,288,000 | 119,919,000 |
| Week ago | 70,513,000 | 120,154,000 |
| Year ago | 59,205,000 | 107,288,000 |

**DRILLING**

| Period | Wells Completed |
|---|---|
| Past week | 475 |
| Previous week | 584 |
| Year ago | 440 |
| **Year Total:** | |
| This year | 28,937 |
| Last year | 23,491 |

## Technology

THE attitude of the operator largely determines the service life of a tank. For each abuse or wrong way to do a thing, there is a correct way that should be known and practiced. On page 17, Brad Mills tells you the "do and don'ts" of tank care and maintenance.

Many practical field men feel that mud "technology" is out of their reach. Therefore, mud control, to be effective, should be reduced to terms which are of significance to the tool pusher and the drillers. Therefore the practical interpretation of drilling mud tests is highly important. Read the article on page 35 that solves many such troubles.

The final chapter of "Circumferential Field Welding of Casing," which is on page 44, continues the discussion on costs of such work, and presents to the point conclusions. Net results, states the author, is for cheaper pipe strings, with greater efficiencies, and probably greater ultimate recovery of pipe.

Other articles on an interesting new gas booster station, obtaining water supply in Illinois, and preventing plunger pump packing corrosion are presented also.

# Proration Picture

**Bureau sees need for 85,000 barrels less in January . . . Texas allowable cut 40,000 barrels, but abandonment of Sunday shutdown means actual output will increase . . . Arkansas to prorate . . . Oklahoma not to change**

CONSUMPTION of petroleum products in January, 1938, will be the lowest since June, 1937, according to the regular monthly forecast of demand by the Bureau of Mines. As a result the Bureau calculates that 3,406,800 barrels will be required daily to meet all needs. This figure is 84,500 barrels per day less than estimated for December, but is 227,200 barrels higher than the actual daily production for January, 1937, and is six percent greater than the actual demand for that month.

Meanwhile, the Texas Railroad Commission issued a new statewide proration order effective December 18, which fixed the state's total allowable at 1,357,573 barrels daily. This was a reduction of 39,269 barrels from the allowable in effect on December 15, and is about 7000 barrels less than consumer demand for the state as figured by the Bureau of Mines.

Actually, Texas production will increase, however. For the commission abandoned the Sunday shutdown policy in the East Texas field, which had reduced this pool's production nearly 70,000 barrels daily below its allowable. Therefore, while allowables were really reduced, the addition of 70,000 barrels daily in East Texas may be expected to create an increase of 30,000 barrels in the state's actual production per day.

The Oklahoma Corporation Commission also was considering the January allowable for that state during the week. It was recommended that Oklahoma's allowable be set at 550,000 barrels, 16,600 barrels less than the Bureau of Mines market demand estimate, and the same as the allowed output in December. The state allowable is usually fixed at the recommended quota.

The action in Texas and Oklahoma indicates that January state allowables will adhere closely to the estimates of the Bureau of Mines.

### Crude Stocks Drop

The January forecast of the Bureau was the third successive one in which a decline was predicted and the suggested daily average represents a drop of 161,300 barrels from the highest estimate of the year, 3,568,100 barrels for October.

In publishing its estimate, the bureau pointed out that crude oil production during the five weeks from October 30 to December 4 averaged about 3,497,000 barrels daily. During that period crude stocks declined 4,106,000 barrels net, including an increase of 414,000 barrels in foreign stocks, which would make a total decline of 4,520,000 barrels in domestic grades. The addition of this amount to crude oil production, it was pointed out gives an indicated demand for domestic crude during the period of 3,626,000 barrels daily, but at least 100,000 barrels of this apparent daily demand represents the crude runs equivalent to a gasoline stock increase in November, 1937, that was about 1,400,000 barrels greater than that for November, 1936.

The bureau estimates domestic motor fuel demand for the coming month at 36,500,000 barrels, or 8 percent higher than the apparent demand for January, 1937, and about 5 percent over the estimated normal demand for last January. Motor fuel exports are estimated at 3,800,000 barrels, in accordance with reports indicating a continued high level of foreign shipments.

### Gasoline Stocks Up

The bureau explained that stocks of finished and unfinished gasoline amounted to 68,037,000 barrels on October 31, last, and that, according to statistics of the American Petroleum Institute, stocks increased about 2,500,000 barrels during November, bringing them to approximately 70,500,000 barrels on November 30, or about 11,700,000 barrels more than they were on November 30, 1936, representing an increase from 44 days' supply to 50 days' supply.

"Even though such stocks may be excessive," it was commented, "the bureau anticipates that refiners will increase their finished gasoline stocks by at least 5,900,000 barrels during January, 1938, compared with an actual increase of 8,000,000 barrels in January, 1937. The estimated increase in gasoline stocks for January, 1938, reflecting chiefly the rapid growth in heating-oil demand, might be reduced by increasing the distillate yield. This might be effected by a further diversion of cracking stock to distillate production and by cracking residuals. The bureau wishes to emphasize that it is not recommending the above increase in stocks but is merely forecasting what may occur in the light of present conditions and past experience."

With benzol and direct sales and losses of natural gasoline estimated at 800,000 barrels, the estimated production of gasoline for the month is placed at 45,400,000 barrels, or 1,465,000 barrels daily, allocating among the several districts, in thousands of barrels, as follows: East Coast, 6400; Appalachian, 1530; Indiana-Illinois, 7760; Oklahoma, 2960; Kansas-Missouri, 2550; Texas inland, 3630; Texas Gulf, 10420; Louisiana Gulf, 1380; North Louisiana-Arkansas, 900; Rocky Mountain, 1100; California, 6770.

Natural gasoline consumption at refineries is estimated at 6.8 percent of the total gasoline required, or 3,090,000 barrels. The yield of straight-run and cracked gasoline is estimated at 43 percent, or slightly lower than the yield for January, 1937. Application of this yield to the estimated straight-run and cracked gasoline production of 42,310,000 barrels gives refinery crude-oil requirements as 98,310,000 barrels.

Foreign crude run to stills is estimated at 2,300,000 barrels, or 100,000 barrels less than the December estimate, and exports, in accordance with forecasts by exporters of their January shipments, have been estimated at 6,000,000 barrels. The estimate for crude oil burned as fuel and losses has been reduced to 3,600,000 barrels.

### Division by States

The January requirement of 3,406,800 barrels daily is broken down by the bureau to give state production as follows:

Texas, 1,350,900 barrels against 1,399,800 barrels for December; California, 678,300 barrels against 679,400 barrels; Oklahoma, 566,600 barrels against 588,800 barrels; Louisiana, 238,400 barrels against 244,000 barrels; Kansas, 179,300 barrels against 186,000 barrels; New Mexico, 103,100 barrels against 104,100 barrels; Wyoming, 55,500 barrels against 57,100 barrels; Michigan, 54,100 barrels against 51,800 barrels; Pennsylvania, 51,000 barrels, unchanged; Arkansas, 35,200 barrels against 33,900 barrels; Illinois, 27,400 barrels against 24,400 barrels; Montana, 13,100 barrels against 15,800 barrels; Kentucky, 14,300 barrels against 14,500 barrels; New York, 13,900 barrels against 14,300 barrels; Ohio, 9,500 barrels against 9,900 barrels; West Virginia, 9,600 barrels against 9,800 barrels; Colorado, 4,300 barrels against 4,400 barrels, and Indiana, 2,300 barrels unchanged.

### Sunday Shutdown Abandoned

The Texas Railroad Commission apparently abandoned the Sunday shutdown, and in a brief statement issued with the order, Commissioner Terrell said that "We desire to give this grave situation more deliberate and careful study. We will, therefore, continue to survey the conditions affecting the production of oil for another 30 days, and at the hearing in January we will go further into the situation after the turn of the year when a more complete analysis of 1937 can be had and a better forecast for 1938 can be made."

There was no change in the allowance for East Texas, the commission leaving in effect the order providing for production of 2.32 percent of the hourly potential. Neither was there any change in Van, Yates or Conroe, the other three major fields.

Austin observers expressed the opinion that the commission had determined Texas should not bear the entire cut, which is necessary to bring

## Texas January Allowable by Districts

| DISTRICT | Allowable Effective 12-15-37 | Allowable Effective 12-18-37 | Decrease |
|---|---|---|---|
| 1 Southwest | 31,790 | 29,474 | 2,316 |
| 2 Southwest | 51,322 | 47,038 | 4,284 |
| 3 Gulf Coast | 185,489 | 185,088 | 401 |
| 4 Southwest | 164,233 | 154,468 | 9,765 |
| 5 East Central | 30,019 | 27,334 | 2,685 |
| 6 East Central | 65,167 | 59,135 | 6,032 |
| East Texas | 489,517 | 489,517 | ... |
| 7 West Central | 50,573 | 44,347 | 6,226 |
| 7-c West Central | 22,968 | 22,969 | Up 1 |
| 8 West Texas | 170,379 | 167,110 | 3,269 |
| 9 North Texas | 63,128 | 60,650 | 2,478 |
| 10 Panhandle | 72,257 | 70,443 | 1,814 |

the nation within the consumer demand. As Commissioner Thompson pointed out, the Interstate Compact Commission is to meet in January, and it is believed that at that time some effort will be made to discuss privately the prospect of having shutdowns in other states comparable to those which Texas proposed to order.

The reduction in the allowable of Texas was obtained by adjusting certain allowables in an effort to permit each field in any given district to produce the same proportions of proratable oil as every other field in that district. It is expected that the current order will remain in effect until February 1. The changes by districts are given in an accompanying table.

### Oklahoma to Adjust

Although the Oklahoma allowable probably will be left unchanged, various adjustments were suggested by W. J. Armstrong, conservation officer.

He would leave the Oklahoma City Wilcox sand zone, only Class A field in the state, unchanged at 97,095 barrels.

Class B pools would be reduced 6199 barrels daily; Class C pools increased 883 barrels; Class D field reduced 600 barrels; unclassified prorated areas increased 3800 barrels and unprorated areas increased 2116 barrels daily.

### Arkansas to Prorate

The Arkansas Board of Conservation last week announced that its original allocation order for the Miller County part of Rodessa would go into effect January 1 and rejected three alternative proposals for prorating that end of Rodessa.

This order was originally scheduled to have gone into effect November 1 but was deferred until January 1. Meanwhile daily average production has dropped from over 13,000 barrels daily when the order was first promulgated to less than the 10,000-barrel mark. The order will allocate production to individual wells on a fifty percent bottom hole pressure and gas/oil ratio and fifty percent on acreage.

Bottom-hole pressures as promulgated by the Arkansas Board of Conservation as of November 9 showed a wide range, all the way from 1189 pounds on one well to 2250 pounds. The gas/oil ratio a month later for the former well was 1977 to 1 and on the latter 1821 to 1.

However, one well showed a gas/oil ratio of 51,111 to 1; another showed 62,713 to 1; and a third showed 69,730 to 1. The only other running into five figures was one showing 13,065 to 1. One well is classed as a gas well and two were being worked over when the pressures were taken.

Following a hearing at El Dorado Monday, December 20, the Arkansas Board of Conservation announced that Maximum allowable per well in the lower Marine (Jones) sand in the Schuler field, Union County, would be 400 barrels, a figure favored by practically all the producers in the field, who are interested primarily in protection against drainage. Production from this horizon is being run by Root Petroleum Company and Lion Oil Refining Company.

Allocations will be based fifty percent on bottom-hole pressures and fifty percent on acreage. A 20 acre space rule was agreed upon some time ago.

Standard Oil Company of Louisiana, which recently found oil production in the Permian lime below 7200 feet in Buckner, Columbia County, at the hearing recommended a 40-acre space rule, which was taken under advisement by the board.

### Kansas Purchases Restored

Stanolind Crude Oil Purchasing Company, only pipe line purchaser in Ellis County, Kansas, has restored its purchases to 100 percent of the state allowable, according to an announcement by E. G. Dahlgren, director of the conservation division, Kansas Corporation Commission. Pipe line congestion had forced the company to reduce buying to as much as 35 percent during recent months.

### Lisbon Unchanged

The January allowable for the Lisbon field was left at 10,000 barrels daily for January, the same allowable as in December, the Minerals Division, Louisiana Conservation Commission announced Thursday. The Sligo field, Bossier Parish, was left unchanged at 600 barrels. The Cotton Valley lower Marine gas field was boosted four million cubic feet daily to forty-eight million feet for January. The Louisiana side of Rodessa was left unchanged at 50,000 barrels daily with an augmented field allowable of 66,000 barrels.

Louisiana's total allowable was left unchanged for January at 82,500 barrels. South Louisiana was boosted 2025 barrels to 173,500 barrels, giving Louisiana as a whole 256,000 barrels for January.

### Texas Wants Tank Report

The Texas Railroad Commission has scheduled its next statewide proration hearing for January 17 at Austin. Railroad Commissioner Thompson said that he planned to invite tank companies to send representatives to testify as to the efficiency of their tanks. His purpose is to determine the exact amount of oil lost through evaporation. Consideration would be given to the type of tank, its geographical location and the quality of oil stored.

### Texas Hearing

A hearing to determine the division line between the Penwell field, Ector County, and the Jordan pool, Crane County, has been scheduled by the Texas Railroad Commission for December 29.

The University of Texas requested the hearing and, in its petition, insisted that the Crane-Ector County line was not a proper division point, but that the division should be "an east and west line through the center of the north half of Sections 4 and 5, Block 35, University Lands; and through the center of the north half of Section 26, Block B-16, Public School Lands."

Close spacing for wells in the new Bennett Pool in Young County was requested at a hearing before the Texas Railroad Commission last week. H. C. Knox objected to 20-acre spacing. He told the Commission that there are now 2 wells in the field, one of which he owns, and both of which are producing from 3600 feet. By taking 35 feet of sand, Knox was able to get 2800 barrels initial production. W. D. Harrell, who appeared for Bennett, has the other deep producer which had an initial production of a little more than 200 barrels.

The Texas Railroad Commission has scheduled a hearing on the Marion County area of the Rodessa field to be held on January 15 at Jefferson. This announcement was made last week at the statewide proration hearing.

It is understood that operators in this area will request different operating rules under a different proration program from that which is in effect in Rodessa proper.


**Annual Editorial Index for 1937**
**To Be Published Next Week**

**As customary, the editorial index of The OIL WEEKLY for the past 12 months will appear as a part of its first issue of the New Year. Therefore, our next number will contain this valuable service.**

**And as usual, the index will be broken into many divisions and cross indexed. Furthermore, a list of the subjects by authors will be printed.**

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# Labor Situation

**Month old Shell refinery strike ends . . . Concerns in Mexico seek injunction against arbitration board decision . . . To test new Pennsylvania working law**

TERMINATION last week of the month-old strike of about 1400 workers at Shell Petroleum Corporation's refinery on the Houston ship channel left the oil industry of the United States practically free of walkouts.

This development combined with additional announcements of bonus payments to employes to give the labor picture a tinge of complacency appropriate to the holiday season.

### Shell Strike Ends

Shell Petroleum Corporation officials and representatives of the Oil Workers' International Union (C. I. O. affiliate) were conferring late last week for working out details of the scheduled immediate reopening of the company's refinery near Houston. Workers of the company December 22 voted to accept an agreement that the union and the company had reached for ending the strike of about 1400 employes which closed the plant November 19.

The strike began when the Shell company officials declined to begin negotiations at the Houston plant before finishing similar negotiations at the company's East Chicago plant. The local union at Houston asserted it never had agreed to such delay.

Ending of the strike will prevent further backing up of Shell company crude oil into storage on the Gulf Coast and in inland Texas, and will place on a firmer footing the West Texas, East Texas, and Rodessa producers from whom the company has been purchasing part of its crude oil requirements.

### Seek Injunction in Mexico

Attorneys for various foreign controlled oil companies in Mexico are busy drafting a petition for an injunction against the December 18 decision of the arbitration board purporting to put an end to difficulties between labor unions and employers. The injunction petition must be filed by January 3.

American oil men looked to Washington, D.C., December 19 for relief from what they termed a confiscatory arbitration of their year-old conflict with Mexican labor, according to Associated Press dispatches of that day. The dispatches inferred the 15 American companies were filled with gloomy forebodings for the future of Mexico's $400,000,000 petroleum industry.

An official of the Mexican labor department estimated it would cost oil companies $7,372,000 (U. S. currency) to meet the increased benefits granted the laborers by the arbitration board's decision. The companies felt it would cost at least $10,000,000 per year to provide for the increased benefits.

An expensive retroactive feature contained in the decision ordered the companies to pay the laborers for the 12-day strike last spring.

The decision, which grants workers a 40-hour week and a minimum wage scale of about $1.45 (U. S. currency) per day, was acclaimed by the oil workers' syndicates as a great victory for the proletariat. Should the injunction be refused and the decision go into effect, the oil industry will be the first of Mexican industries to be given a 40-hour week.

Reports were current that the Mexican government would consider some sort of a compromise to help justify the additional demands on the oil company coffers. It was said the administration would not be averse to an increase in the price of gasoline and oil as a measure to help the companies meet the increased costs of operating in Mexico.

Some American companies insisted the decision be made the basis for a showdown fight, but Compania Mexicana de Petroleo El Aguila, S. A., a shell interest, was said to be considering a separate peace in view of concessions, notably the Poza Rica development project it recently received at the hands of the government officials.

It is estimated 48,000 workers are involved in the decision.

### To Test Pennsylvania Law

Pennsylvania's new 44-hour week law, which stands as a serious threat to owners of 95,000 stripper wells, will be subject of a constitutional test by more than 100 industries, it has been indicated. Meanwhile, Ralph M. Bashore, secretary of labor and industry, announced that a new "modification" of the law's provisions applying to "outside workers" would further ease the law's application to Pennsylvania producers. A ruling of a week ago permitting employers of three or less persons to maintain a 54-hour week, divided into six 9-hour days, will be of some benefit to small operators.

"The amendment for 'outside workers' applies very specifically to certain jobs in the oil business," Bashore stated, explaining that "those jobs" were easily distinguishable from the wording of the amendment itself.

The amendment reads: "Employers may permit employes in or immediately connected with outside work to average 44 hours per week over a period of one calendar month and to work six days per week where weather and climatic conditions have caused interruption of regular employment."

Bashore last week warned that employers who "flout" the law after January 3, its effective date, face prosecution despite the fact that a supreme court decision on its constitutionality is being sought. "Where a person is attempting to comply with the act, but is having difficulty, of course we will withhold prosecution, but where the facts warrant, we absolutely will start prosecution," he said.

### Suit Filed

First constitutional test of the law was filed last week by a Kane, Pennsylvania, manufacturing company in Dauphin county court at Harrisburg. More than 100 companies have since intervened and an attempt is being made by Attorney General Charles J. Margiotti and Thomas R. White, Philadelphia, attorney for many of the companies, to prepare an agreement of facts which will enable the state supreme court to take original jurisdiction in an equity suit attacking its constitutionality.

The Kane company seeks an injunction preventing the law's enforcement and bases its attack on the following eight points:

1. Enforcement will deprive the company of liberty and property without due process of law. 2. The law is an "unwarranted interference with the business of the company" and an unwarranted invasion of the freedom of contract of the company and its employes. 3. The law is an unlawful attempt to delegate legislative power to the department of labor and industry, which is responsible for making regulations as to enforcement. 4. The law impairs the obligation of contracts between the company and the employes. 5. The law is not a proper exercise of the state's police power. 6. Classification of employes as established in the act are "arbitrary, capricious and unreasonable." 7. The law is special legislation "regulating labor, trade and manufacturing and granting to certain corporations, associations and individuals special privileges and immunities." 8. Equal protection for all persons would be denied under the law, in violation of the federal constitution.

### Bonus Paid

A cash bonus has been paid to all Bishop Oil Company employes in California, Texas, Oklahoma, and Kansas. All salaried employes who have been with the company for one year or longer received one-half month's extra pay. Day employes who have been with the company six months or longer received a bonus of $50. Those who have been employed less time received a bonus in proportion to the time they have been with the company.

Employes of the Sunray Oil Company shared in a $16,000 Christmas bonus budget.

Bonuses for employes of the Globe Oil & Refining Company, Lario Oil & Gas Company, and Broadwater Drilling Company totaling $75,000 have been distributed.

### More Employment in 1937

Socony-Vacuum Oil Company had more people at work at higher pay in 1937 than in 1936, according to John A. Brown, president.

"In our Socony-Vacuum organization as a whole during this year, there have been more people at work at higher pay. Volume of business increased, and profits were better for most of the year. Despite current world doubts and conflicts, we have reason to be hopeful for the future."

# Legislative Trends

**Special session of congress closes without passing oil bills . . . Forthcoming regular meeting apt to consider labor pay and hours, and taxation matters**

WITH the special session of Congress closing without passing several bills expected to be favored, attention was being turned to the forthcoming regular session and its legislative possibilities.

Administration forces last week admittedly had little hope of procuring new consideration of the wage and hour bill during the approaching new session. Tax legislation to be laid before the House Ways and Means Committee at the opening of the regular session next month is expected to provide for repeal of the processing taxes levied originally for the financing of code activities. Possible reduction of the depletion allowance was seen as another action.

During the course of considering the wage and hour measure in the special session, Congressman Albert Thomas of Texas and Representative Lyle Boren of Oklahoma submitted an amendment providing for a maximum week of 40 hours for employes engaged in drilling, production, pipe lines and refineries, with the exception of stripper well pumpers and employes on isolated properties. The amendment, which was defeated, provided for a minimum wage of $5 for a six-hour day.

The House rejection of the amendment followed the insertion in the Congressional Record by Representative Martin Dies of Texas of a statement by Harvey C. Fremming, president of the International Oil Workers Union, to the effect that the majority of the workers engaged in drilling, production or refining, already were receiving a minimum wage exceeding that proposed in the bill and worked on a 36-hour basis.

It was pointed out by Representative Maury Maverick of Texas that the Thomas-Boren amendment would not affect the oil workers in any way, since they receive from 75 cents to more than $1 an hour and work a week of less than 40 hours.

### Process Tax Most Likely

Elimination of the process tax was agreed to tentatively by the tax subcommittee at its last meeting before end of the special session. It was estimated that repeal would cost the Treasury a revenue of about $920,000 a year. Actual collections for the first 10 months of the current year were $886,000.

Although the special session of Congress took no action on the important principle of percentage depletion in natural resource industries, it is expected to receive attention in the coming regular session. The Treasury Department has termed the 27½ percent depletion allowance now granted as a "glaring loophole" in the Federal Internal Revenue Act, and is expected to urge a reduction. One of the strongest fights against legislative matters since the "federal control" bill is expected to be waged by the industry against this proposal.

# Taxation

**Governmental revenues derived from gasoline taxes are approaching another new all-time peak**

THE taxes that are levied on gasoline materially affect the selling price for the product, and consequently, the quantity of gasoline that the oil companies can sell to the public. For this reason, the oil concerns have reason to keep a watchful eye over both gasoline tax collections and developments in road construction and maintenance.

In this connection, some important information was revealed recently by Baird H. Markham, director of the American Petroleum Industries Committee at an interstate conference on gasoline taxation held in New York City.

He pointed out that the revenues from gasoline taxes are this year approaching another all-time peak, and that the tremendous gain that has occurred in such revenue should lead to substantial reductions in rates in many states, thereby affording motorists much needed relief in the direction of tax reduction.

### Tax Money Diverted

But unfortunately, he stated, in a number of states, expanding gasoline tax revenue has been followed by diversion of road toll funds to non-highway purposes, thus defeating the underlying principle of automotive taxation. In 1936, he stated, the misappropriation of road taxes by the states was equivalent to an amount approximately one-quarter of the total received by the states in gasoline taxes. High gasoline taxes do not necessarily insure the motorist of good roads, he stated. Some of the states that have maintained low rates of gasoline taxation, he said, have road systems which are far better than those in certain states that collect high taxes.

Basing his figures on a probable 11 percent increase in consumption of gasoline in 1937 over 1936, Mr. Markham predicted that total gasoline tax collections for this year will reach a new all-time peak of $975,000,000, which would represent a gain of $100,000,000 over last year. The increased consumption of gasoline is attributed to both a larger number of automobile owners and a greater annual consumption of gasoline by each motor vehicle.

### Present Road Systems

The gasoline taxes that will be collected this year represent the equivalent of $1900 for each of the 520,000 miles of improved and unimproved state highways in the United States, or $6000 a mile for each of the 165,000 miles of road in the United States which have surfacing better than gravel or waterbound macadam. At $10,000 a mile, the gasoline taxes to be collected in 1937 would build nearly 100,000 miles of highway, an amount equal to more than one-quarter of the total mileage of 371,424 miles of surfaced highways in the primary road systems in all the 48 states.

In recent years, there has been an acceleration of the rate at which gasoline tax revenues have forged ahead of gasoline consumption. Consequently, much of the growth in gasoline tax revenue has occurred since the pre-depression peak year of 1929. In that year, the motorists of the United States paid $431,311,000 in gasoline taxes, and by 1936, the gasoline tax bill had increased to $872,954,000, a gain of $440,000,000 over 1929.

## *Federal gasoline tax collections are up*

Collections from the Federal gasoline tax showed a sharp gain in November as compared with the preceding month but receipts from the other oil taxes fell slightly, it was reported December 22 by the Bureau of Internal Revenue.

Gasoline tax collections were placed at $18,674,817 against $18,267,971 in October and were nearly 50 percent greater than the $12,980,998 received in November, 1936, it was announced.

Receipts from the lubricating oil tax aggregated $2,457,517 which, while under the October total of $2,581,168, was well ahead of the $1,878,392 collected in November of last year.

Transportation by pipe line returned a revenue of $922,322 for the month against $983,846 in October, and $720,738 in November a year ago, and processing taxes amounted to $80,460 against $82,677 in the preceding month and $74,189 in November, 1936.

For the 11 months ended with November all four tax groups showed marked increases over the same period last year, gasoline tax receipts being $185,439,672 against $170,058,537; lubricating oils, $31,123,114 against $26,444,387; pipeline transportation, $11,229,657 against $9,520,027; and processing, $886,599 against $789,644.

# Most Forecasts for 1938 Optimistic

## Economists and business men generally hold opinion that present slump will end in coming year... Definite improvement expected around middle of 1938... Outlook for oil industry is promising

By L. J. LOGAN, Associate Editor

IF forecasting can make things so, as maybe it can to some extent, a definite revival of business lies only a few months ahead.

For currently the crystal gazers, professional and amateur, are working over-time, seeking glimpses of events that will transpire in 1938. And there is a remarkable agreement among the forecasters that this is not the deluge—that business is in only a temporary slump, from which it will recover in the coming year, possibly as soon as late spring.

Furthermore, a similarly hopeful attitude apparently is widely prevalent among business men in general.

### Definite Pessimism Rare

These numerous signs of confidence contrast with a noteworthy absence of real, emphatic pessimism. While many economists, industrialists, and financiers have asserted and reasserted confidence that the basic movement still is upward, scarcely a forecaster has gone on record as believing that a major downward swing has begun.

Put together, all these circumstances constitute a strong indication that developments actually will prove encouraging in 1938. For the optimistic views represent the studied opinions of many men, who have taken all the known factors and probabilities into consideration, indicating that there is a strong foundation of fact for the forecasts. And the forecasts in themselves naturally will help to bring into existence the developments that they point out as likely to occur.

### Optimistic View Taken

Economists of various United States government agencies have embraced the opinion that business improvement is due to occur within a few months. Those economists generally believe that the chances are against continued business declines or a major depression and that trends will turn back upward again in 1938, after remaining flattened for some time, perhaps until the beginning or end of spring. Treasury officials have been among those concurring in this optimistic view, in making their forecasts of probable revenue, in connection with the budget.

Editors of trade publications of most industries are optimistic regarding 1938 prospects in those industries, expecting the year to bring a recovery of business vigor. These spokesmen for various lines forecast larger business volumes in 1938 than in 1937. Diminishing inventories are generally pointed out as an important probable cause for a revival of activity. In some lines, production has been curtailed so drastically that consumption is eating rapidly into the inventories.

### Automotive Outlook Fair

From the standpoint of the petroleum industry, the prospects in several allied industries are significant, just as the oil outlook itself is important.

The situation in the automotive industry is, of course, especially important, and from it oil men can derive at least some encouragement. Some of the forecasters are relatively pessimistic over the outlook for production in 1938, expecting manufacture of 25 to 35 percent fewer vehicles than in 1937. But other experts are more optimistic. An average of the predictions indicates that output of motor vehicles will be around 20 percent lower in 1938 than in 1937, or that production for the United States and Canada will be around 4,000,000 motor vehicles, compared with about 5,000,000 in 1937.

For the oil industry, that prospect is bright, despite the indicated decrease. For it means that many more new motor vehicles will be added to the 30,000,000 already in use in 1937.

### Buses and Planes

The coming year is expected to bring a continuation of large use of motor buses within and between cities. It is indicated that bus purchases in 1937 reached a new peak. And the companies operating buses during the year showed increases in operating revenues, in number of passengers carried, and in number of miles traveled.

The aviation industry made further advances in 1937 and is expected to forge further ahead in 1938. Makers of aircraft in 1937 enjoyed large gains in business and currently have on hand more orders than ever before, assuring large production activity in 1938. Air transport companies in the past year showed substantial increases in passengers carried and miles flown, and they hope for good results in the coming year.

### Oil Demand Increase Looms

Even the more pessimistic forecasters concede that demand for petroleum products probably will be larger in 1938 than in 1937, resulting in further increases in petroleum production and refining. Colonel Leonard P. Ayres, vice president of the Cleveland Trust Company, for example, predicted increased petroleum refining, although he was less optimistic than many other economists.

Joseph E. Pogue, official of a New York bank, some months ago predicted a 5 percent increase in gasoline consumption in 1938, despite his expectation of reduced general business.

Colonel Ernest O. Thompson, chairman of the Interstate Oil Compact Commission and member

of the Texas Railroad Commission, recently predicted that petroleum demand in 1938 will be about 6 percent larger than in 1937.

### Price Outlook Uncertain

Heavy demand cannot, of course, guarantee profitable operations of oil companies in the coming year. It can only serve as an important factor promoting favorable earnings.

The other of the two principal requisites for good results, profitable prices, depends on success or failure in balancing supply with the available market demand. If the balancing is achieved successfully, stable markets and satisfactory prices will result.

In recent years there has been remarkable success in balancing the new supplies of oil with market requirements.

But in the meantime, the task has been made relatively easy by the consistently rising trend of consumption.

A less sharply rising trend of consumption in recent months already has unsettled the oil industry's markets, particularly the gasoline situation; although crude prices still are holding.

### Strict Control Needed

This disturbed condition of the industry's markets sounds a warning that the industry and the oil conservation officials must remain on guard against any serious unbalancing of supply and demand. Continued success in saving the existing crude price postings can be assured only by further strict control of crude production, with the view to preventing any additions to crude storage and to holding additions to gasoline storage down to a minimum.

The excessive gasoline inventories represent the outstanding point of weakness in the oil picture, stocks being 23.8 percent larger than at this time last year, whereas demand for gasoline lately has been running less than 10 percent above last year's trend.

Having increased further by nearly 3,000,000 barrels in the week ended December 18, gasoline stocks in the United States have risen to 73,288,000 barrels. At the all-time peak last spring, the total was only 83,000,000 barrels. In view of the present heavy inventories, it now is indicated that the gasoline stocks are destined to rise in the coming spring materially higher than that 1937 peak. For several months of cold weather and heavy fuel oil consumption lie ahead, and the industry will be obliged to run substantial quantities of gasoline into storage in the process of turning out sufficient fuel oil to meet the heavy requirements.

### Gasoline Situation Disturbing

This gasoline situation constitutes cause for serious concern. For even the stocks of last spring proved excessive, despite materially increased gasoline consumption.

A new record level of gasoline storage next spring and less sharply rising consumption obviously would combine to result in relatively unfavorable markets and prices for gasoline.

And already the gasoline prices, from refinery to service station, have declined materially in the past three months, being now lower than at this time last year, in the face of continued effectiveness of the 10 percent increase in crude prices last January.

The gasoline market in the past few months naturally has been seeking to pull the crude oil market down to its own lower levels. But strict crude control has given the crude market exceptional power of resistance.

However, the downward pull of the gasoline market still has not been relinquished, and in the coming months the crude price structure will continue on the defensive. Unusually strict crude control apparently is the one weapon that can do most to save the crude market, in which event the gasoline market eventually must yield and come back up to a parity with the crude price structure.

### January Demand Estimated

For January, at least, there is confirmation of the optimistic forecasts of petroleum consumption in 1938. The Bureau of Mines has estimated that requirements of domestic crude oil production in January, 1938, would average 3,406,000 barrels daily, or 6 percent more than in January, 1937. The bureau estimated at the same time that domestic motor fuel demand for January would be 8 percent larger than the apparent demand of last January. It also predicted continued brisk export business in January, estimating gasoline exports for the month at 3,800,000 barrels.

The Bureau of Mines estimates of demand in January indicate that forecasters who think in terms of an increase of around 5 percent for 1938 over 1937 may prove too conservative. Such a gain looms even for January. And if the predictions of a business upturn within several months should materialize, the improvement in demand for all of 1938 logically might be larger than the 5 percent.

For the first 10 months of 1937, total demand for United States petroleum was 10.5 percent larger than in the similar period of 1936.

For the 10 months, the domestic demand for gasoline was 8.5 percent larger this year than last year, while gasoline exports were up sharply.

### Equipment Surveys Needed

It remains conjectural how the oil industry's expenditures for drilling, refinery construction, and so forth, in 1938 will compare with those in 1937. But in view of the expectations of further increases in petroleum consumption, it is indicated that there will be need for providing about as many new wells and facilities in the coming year as in the past year.

Consequently, it might prove unsound for oil companies to be too conservative in planning next year's work.

In that connection, Marriner S. Eccles, chairman of the Federal Reserve Board, recently warned that in view of present reduced inventories in many lines, business men should carefully survey their present and prospective inventory, plant, and equipment requirements. He asserted that further curtailment of expenditures for such purposes would make some lines of business physically unable to fill orders upon resumption of the recovery movement. Delay in expanding productive facilities to handle increased demand, he said, would force business men to bid against each other at rising prices.

### Steel Supplies Diminishing

Inventories of steel are being worked off, and current output is being better supported by new buying. Moreover, several weeks are required for producing and shipping steel. Together, these circumstances involve possibilities of difficulties henceforth in replenishing supplies of steel and steel products on short notice. This is a circumstance that should be taken into consideration by oil companies and operators, as consumers of oil field, pipe line, and refinery equipment.

## CARE AND MAINTENANCE OF

# *Oil Field Tanks*

## DURING TRANSPORTATION, ERECTION AND ON THE LEASE

By BRAD MILLS, Associate Editor

AN oil field storage or stock tank is by nature and necessity a piece of vulnerable equipment. From the time of manufacture until final dismantlement it is subjected to various abuses that might not damage more rugged equipment. The outside of a tank is constantly exposed to the elements, while the inside directly contacts oils, gases and waters that often combine to attack both metal and seams.

### Lightest Major Equipment

It is not intended to picture the tank as a fragile container that ruptures or explodes at the slightest misuse, but rather to show it as a piece of light equipment that serves well with proper handling and maintenance. The ordinary oil field tank is the lightest major equipment used, when considered from a displacement standpoint. A standard 500-barrel, "low" stock or storage tank weighs less than 2¼ pounds per cubic foot of displacement, and other types are even lighter. The operator should bear in mind that tanks are heavy enough for regular use, but too light for rough handling that would not damage more rugged equipment.

### Great Progress in Design

Tank manufacturers have almost eliminated design faults that gave trouble 15 years ago. Tanks approach perfection in every mechanical detail, and nothing has been overlooked to make them strong, tight and serviceable. Superior fabrication has increased the speed and ease of erection and facility for dismantling. The low tolerance in every phase of manufacture has given the erection crew a product that requires little forcing at any point. Progress in wood tank design has been as effective as in steel tanks. In both types the manufacturer attempts to give the user a tank that will give good service with proper maintenance.

**Nineteenth Article of Series**

**THE nineteenth of The OIL WEEKLY's "Equipment Care Series," published herewith, deals with the progress in design of steel and wood tanks, the importance of selecting the proper type of tank to handle a given crude, the changes that time makes in the demands on a tank, the economy of proper maintenance investment, transportation abuses by truck and railroad, together with remedies for same, and moving lease tanks. It then discusses construction problems, foundations, drainage, seam paints and packing, personnel work, stave curves, bolt cutting, chronic leakers, sloppy samplers, and checking corrosion.**

Much of the early trouble experienced during the service life of tanks was the aftermath of damage done during erection. The staves simply were forced into place when they failed to fit properly, and subsequent buckling and warping occasioned by weather changes took a heavy toll among the early tank batteries that met urgent or emergency requirements.

### Four Groups of Abuses

Tank abuses may be classified in four general groups. They are:

1. Material selection abuses.
2. Transportation abuses.
3. Construction abuses.
4. Maintenance abuses.

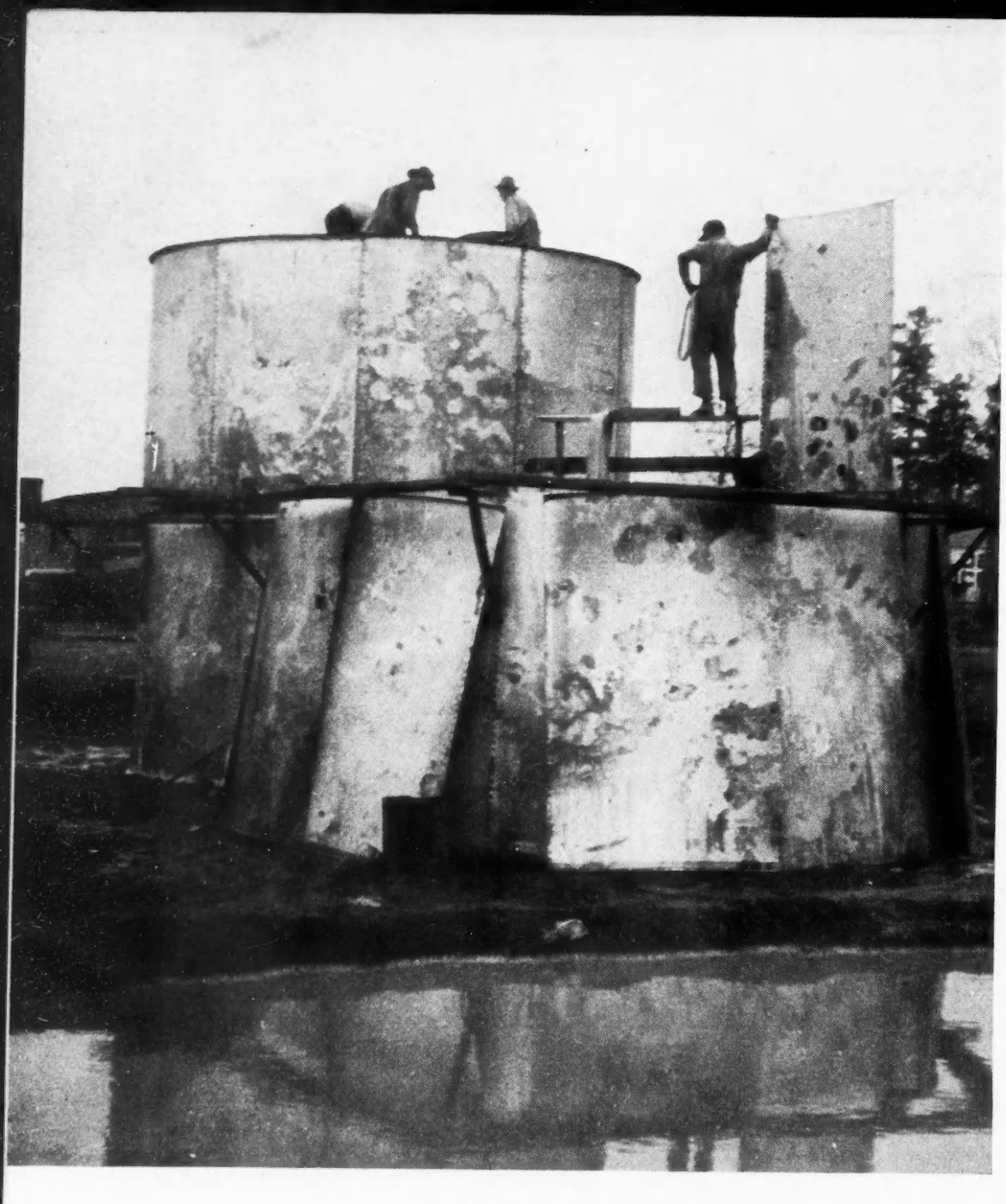
For each abuse there is obviously a constructive "opposite" that gives the entire care and maintenance program a "do and don't" aspect. For each abuse or wrong way to do a thing, there is a correct way that should be known. The purpose of this article is to show both sides in an unbiased manner. Manufacturers and contractors are not in complete agreement on several phases of construction and maintenance, but there are only slight differences affecting the major items.

### Selection of Material

Material selection abuses can be much more serious than the average operator suspects. Use of the proper or most effective tank in a highly corrosive district will sharply reduce storage costs over a 10-year period. Actual experience has shown the service life of tanks of a certain type to be less than two years when used in the most corrosive oil producing districts. Tanks of an improved type show a service life of four years or more, and still another type has an indicated service life of more than 10 years. The most effective type costs more in the beginning, but the cost over a 10-year period is less than half that of the less effective tanks.

### First Cost Not Most Important

It is easy to understand that the first cost of a tank is not the most im-



**Rough handling of tanks in resetting is uncalled for. This photograph shows how tank parts should NOT be handled.**

portant consideration, where service life is the chief factor. In the dry and light corrosive areas, conventional tanks of low cost design show to advantage, and this is the type most commonly used.

The ordinary steel tank should not be broadly condemned for its failure to give long and uninterrupted service under very corrosive conditions. Certain vapors and acids attack steel and iron, despite the superior strength of these metals. The operator should consider the probable storage cost per barrel per year in the selection of oil field tanks for use in corrosive areas. Bottoms and decks of entire tank batteries have corroded through in less than two years in a few of the most notable sour oil districts of West Texas and New Mexico. Tanks of special material also give better service along coastal belts than those built of ordinary steel. Occasionally special coating, plating, treating or painting will meet a condition that does not require a tank of radically changed design.

### Requirements Vary With Locality

In the selection of tanks for the various producing districts, the operators may choose those made of ordinary steel, alloy steel, wrought iron, galvanized steel, galvanized wrought iron, and wood. Experience in several districts has done much to establish the relative value of the several types of material, but in some of the newer corrosive areas insufficient time has elapsed to place the true value on the various tanks used. In at least two large producing districts, claims for tanks of a certain type were not supported by actual experience. The operator should keep an open mind during the selection of tanks for any district. Tank requirements are so varied that the manufacturers of all types participate yearly in sales to several hundred oil producers. Manufacturers for several years have been changing dimensional and/or metallurgical and finishing specifications to meet changing requirements.

### Time Changes Demands on Tank

A tank battery that serves well during the early life of a producing district may fail rapidly during the intermediate and late stages of development. Salt water encroachment should be expected in many fields, and tanks that handle only clean oil for a few years may be called on to receive cut oil and water as the field potential decreases. The possibility of corrosion should be considered in advance of tank erection, but it is often difficult to anticipate tank requirements over a long period.

Where a field produces sweet gas and there is some question as to the entry of salt water, ordinary steel tanks may be used to advantage. In areas producing sour crudes and corrosive gases, the operator should take early steps to erect tanks that most nearly meet requirements. It is well to consider that salt water and acids are highly corrosive to ordinary steel, and that either the metal must be protected from the corrosive agents or tanks of another material be used. To meet requirements a tank either must lend itself to a protective agent or be made of material that is not vulnerable to attack from the liquids or vapors handled.

Broadly speaking, ordinary steel tanks are best in the non-corrosive areas, alloy and wrought iron tanks in the mildly corrosive areas, galvanized tanks in the ordinary corrosive areas, and wood tanks in the extremely corrosive areas. Each type has a definite place in the industry, but proper maintenance must be administered to any tank battery if the operator expects to receive the service life originally built into it.

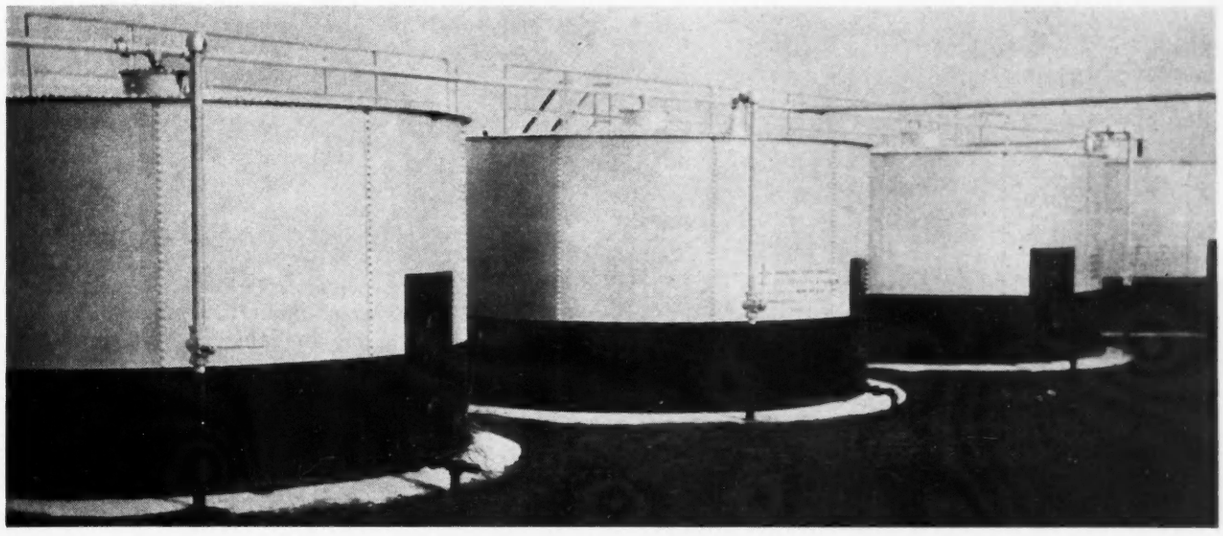
### Transportation Abuses Numerous

Transportation abuses add to construction problems and contribute to untimely tank failures. One steel tank manufacturer has traced a large part of its difficulties to poor transportation practices by railroads and trucks. Abuses of this type start at the point

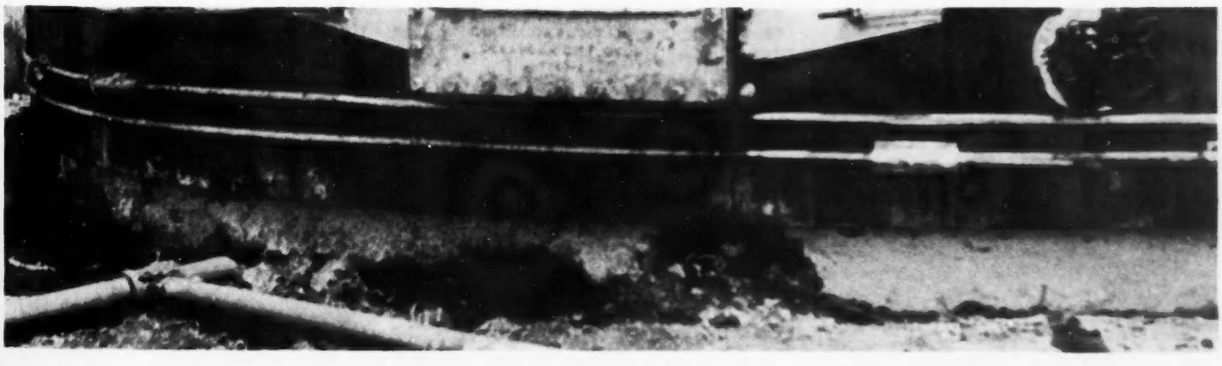
**This wood tank was built on a soft grade that is washing away. Permanent foundations should be provided.**

of manufacture and continue to the final erection point. Tanks handled only once by railroad may be handled several times by truck. Both manufacturers and purchasers of tanks have given serious consideration to transportation problems, but damage from rough handling continues to exact a heavy toll.

Damage during shipment by railroad has been largely eliminated by changing the position of the tank parts in the car, but occasional trouble during erection may be traced to improper position in the car, or to a shifting cargo. The practice several years ago was to ship the staves flat in railroad cars, but such a technique has given way to a program that calls for an upright position of the staves. By standing the staves on end, the natural curve is preserved, the base metal protected, special coatings or platings are shielded, and flanges are protected from excessive bending and twisting. Many tanks are shipped with the staves flat, but without full support often lose a part of their original shape. When assembled into a finished tank, the staves are very strong, but as separate pieces they are easily damaged. The railroads have offered to cooperate with tank manufacturers, and with urgent recommendations from tank contractors and oil companies as a guide, con-



**A Gulf Coast producing company has developed an unusual use of concrete around tank bases. The concrete extends only a few inches under the tank and to a point about one foot out from the tank. Incidentally, the paint job on these tanks is five months old. Not a leak appears.**



**This tank rests on a concrete foundation that will give proper support over an extended period.**

**These leaks were produced by using treating temperatures that were too high. Wood tanks will not withstand sustained temperatures above 150° F.**

siderable progress has been made along this type of transportation.

### Wood Blocks and Soft Rope

Transportation of oil field tanks by truck is so extensive that damage of almost every type should be expected from this phase of operation. Truck drivers frequently chain the staves on the trucks in a careless manner, causing damage to the base metal, to galvanizing, and to the shape of the staves. Where tank movement is by truck, use of wood blocks and soft rope will prevent damage that surely would occur with the haphazard use of chains and binders.

The mental attitude of a truck driver is an important factor in the transportation of tanks. If he is inclined to handle tanks as if they were cord wood, damage certainly will ensue from his actions. The mere piling of tank staves and parts on a truck and promiscuous use of chains immediately brands the truck driver as a careless person who is not interested in his mission.

### Train Your Drivers

The oil company and tank contractor can train truck drivers to handle tanks without damage. Whether a tank is moved as a unit or in a knocked-down position, care and recognition of certain principles are necessary. Truck drivers usually damage tanks in their initial effort to move them, unless the work is supervised by experienced men. In West Texas several batteries of tanks were badly damaged by truck movement between the railroad and oil field. An investigation revealed that the tanks had been handled by inexperienced truck drivers who had been accustomed to handling more rugged materials. Oil company truck drivers are not much more dependable than those employed by trucking companies, and handling of tanks is just another job to the average truck driver. One major oil producing company has almost eliminated damage by truck, through a light training course for truck drivers.

If staves are not handled with care, the curvature is partially removed from them. Such damage necessitates hammering into place in the field. The flanges also suffer from improper handling by truck. The average oil field superintendent, foreman or truck driver can easily place tank parts or small tanks as a unit on a truck in such a manner that they will reach their destination undamaged.

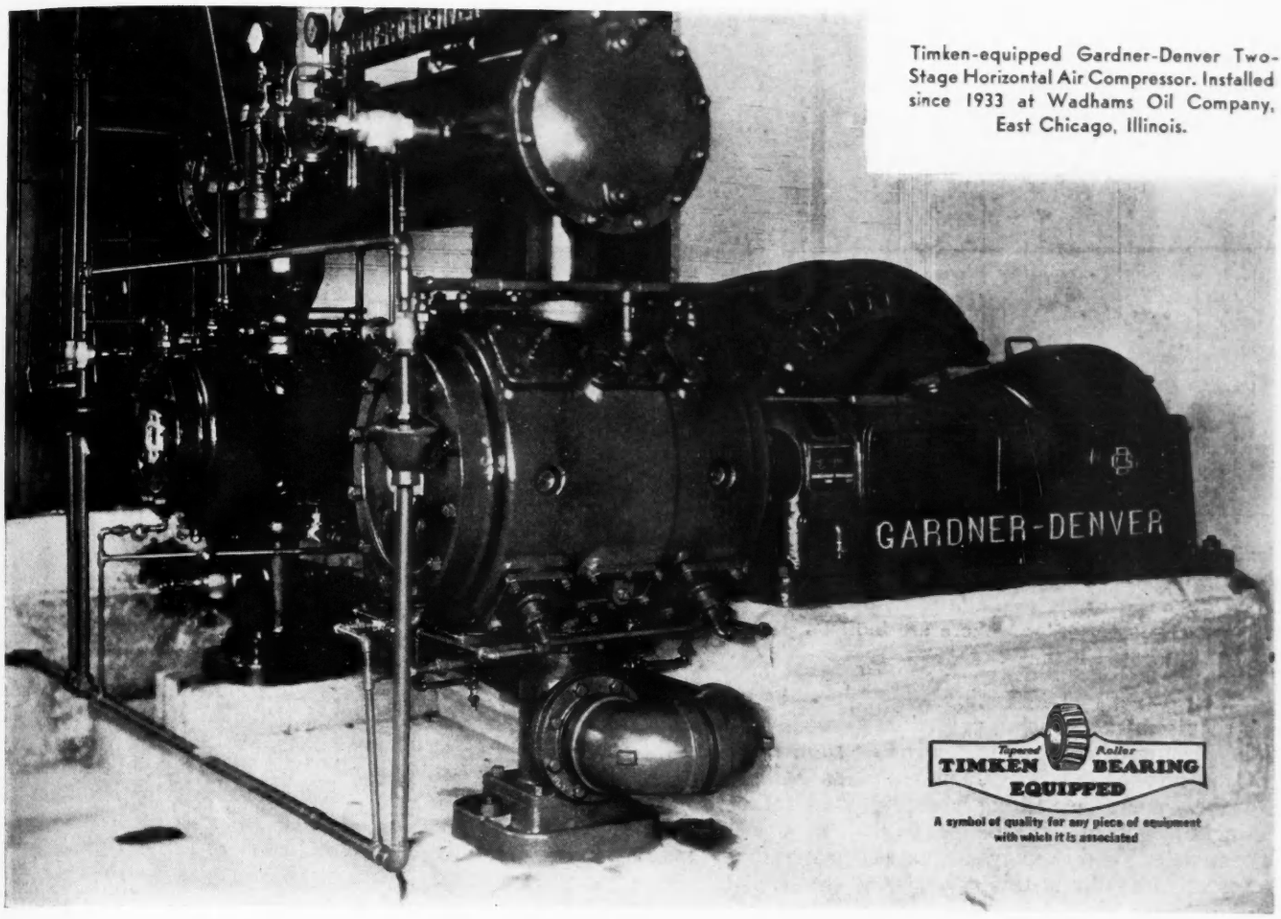
### Common Abuses

Handling and moving small tanks after erection is an art within itself, and every phase of this type of transportation requires care. The small welded tanks may be moved with comparative ease, but the small bolted steel tanks are much more susceptible to damage. Pulling tanks from their foundations with chains, severe use of jacks, and dropping tanks are common abuses. Because of the possibility of damage to seams and packing, most of the large oil producing companies prefer to dismantle the larger steel tanks and re-erect them at new locations, rather than attempt to move them a considerable distance as a unit.

It is easy to damage staves and fittings during unloading from trucks. A stave dropped heavily on a corner may be restored to its original shape only with difficulty. Galvanized tanks are easily damaged by rough handling, although the zinc coating is serviceable enough to withstand approved transportation practices. Rough treatment crimps the edges of the staves, and often a tight row of bolts will not prevent seam leaks.

### Moving Lease Tanks

It is not uncommon for an oil company to move a stock tank several times a year, due to variable requirements on leases. This moving usually is done by the company, and not by a contractor. Jacks are placed under the tanks at several positions around the base, the tank raised, and then tilted onto skids or a truck for trans-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During these four years TIMKEN Bearings held the crankshaft in absolute alignment; prevented shaft wear; reduced power losses and lubrication costs; and they carried with true rolling motion all radial, thrust and combined loads. Specify and insist on Timken-equipped compressors. They will make a record for you, too.

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The Rock Island "Rockets" Roll On TIMKEN Bearings

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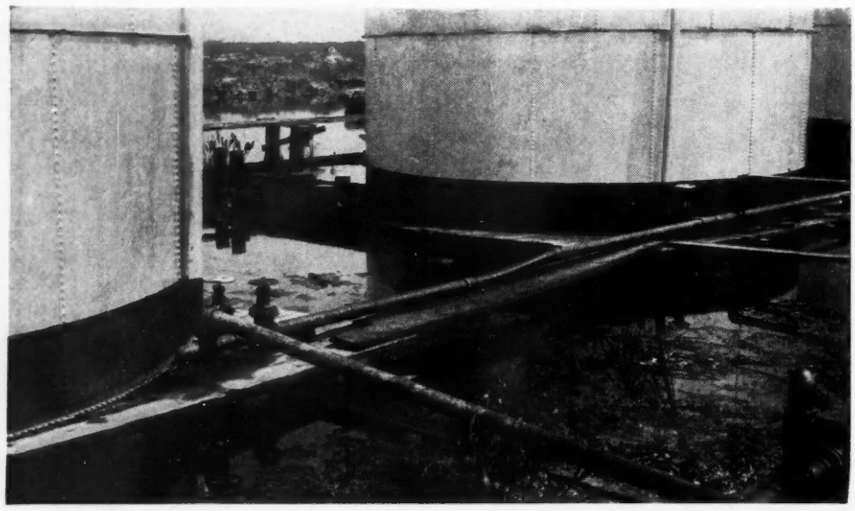


**Flexible metallic pipe sections are used between flow tanks that are temporarily placed on mat foundations. This practice was necessary during early operations in such marshy fields as LaFitte, Louisiana. Most of the permanent batteries there are built on piling.**

portation to another location. The first requirement in such a procedure is the placing of a board under each jack to prevent the jack from sinking into the ground or tilting sharply. Tilting often bends the flanges and bottom sheets, and in many instances sheers off the bolts at this point.

### Construction Problems

The construction of tanks offers a very fruitful field for abuses. The setting of a dozen tank batteries in a large oil field involves a combination of engineering and common sense. Drainage, the nature of soil, location of the tank batteries with reference to extended future operations, and other factors should be considered ahead of actual construction.

### Foundations

Any tank gives its best service when erected on a suitable foundation. Firm, well-drained ground makes a good foundation for steel tanks located in favorable areas, but tank manufacturers recommend that concrete grades of adequate thickness and design be used in all cases of a permanent nature.

It is often difficult to obtain a satisfactory foundation for single tanks, where part of the tank rests on old ground and part on a new fill. The settling of the new dirt may be enough to affect the tank seams. With care, however, tank batteries may be built on any well drained soil that offers good support.

Theoretically, concrete grades or foundations are superior, but in large fields that require dozens of small tank batteries, well drained soil gives good service. The weight exerted per square inch on the soil by the tank is so little that settling action of the soil, rather than weight on it, becomes the principal factor in foundation programs. Where earthen grades are contemplated, a soil analysis should be made.

Along parts of the Gulf Coast the soil is silty, wet and marshy, and tanks gradually sink when erected on such a foundation. Tanks along this treacherous area are set on piling or on mats. In all marshy areas the settling tendency is marked. In the Lafitte and Port Neches fields, tank foundations have given no end of trouble. The first tank batteries were placed on mats, but the settling action was much greater than had been expected. The sinking or settling action of each tank was fairly uniform over the entire bottom surface, but the outlet connections were twisted out of line. This resulted in leaks of various types, broken connections, and severe warping where the flow lines from the tanks offered a supporting action on only one side.

### Use of Piling

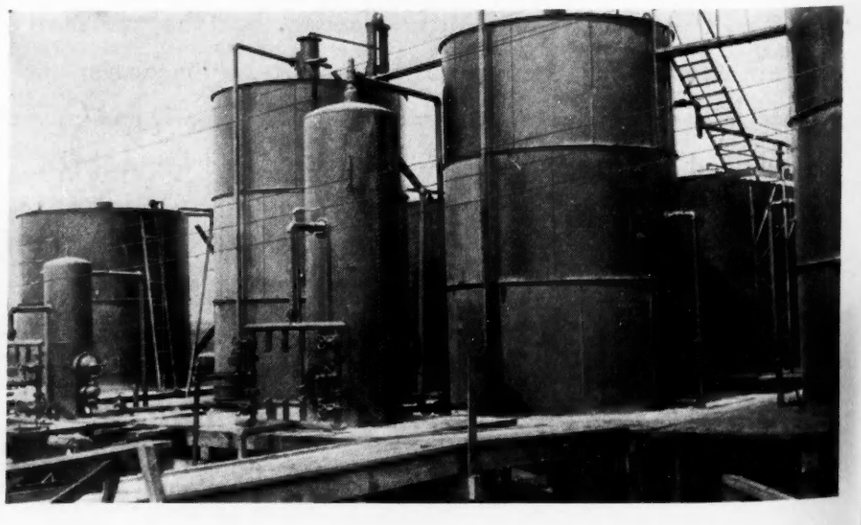
Piling has been used to advantage for permanent foundations in the marshy areas. The supporting action of piling can not be denied in some fields that show a very soft or "jelly" formation on the surface. Mats give satisfactory service within certain limitations, but their use has been mostly a temporary measure.

Tanks placed on the ground give a full measure of service in well drained districts. After a tank bottom has been well painted, treated and properly placed, the outer surface will not show more than normal wear expected from the top and shell. Tanks dismantled after a long service period have shown only nominal wear on outside bottoms where soil conditions were favorable and the tank bottoms had been properly prepared. When earthen grades are used, the tank bottoms should be properly painted, treated, and protected with heavy tar or roofing paper. The diameter of the bottom covering should be about four inches less than that of the tank.

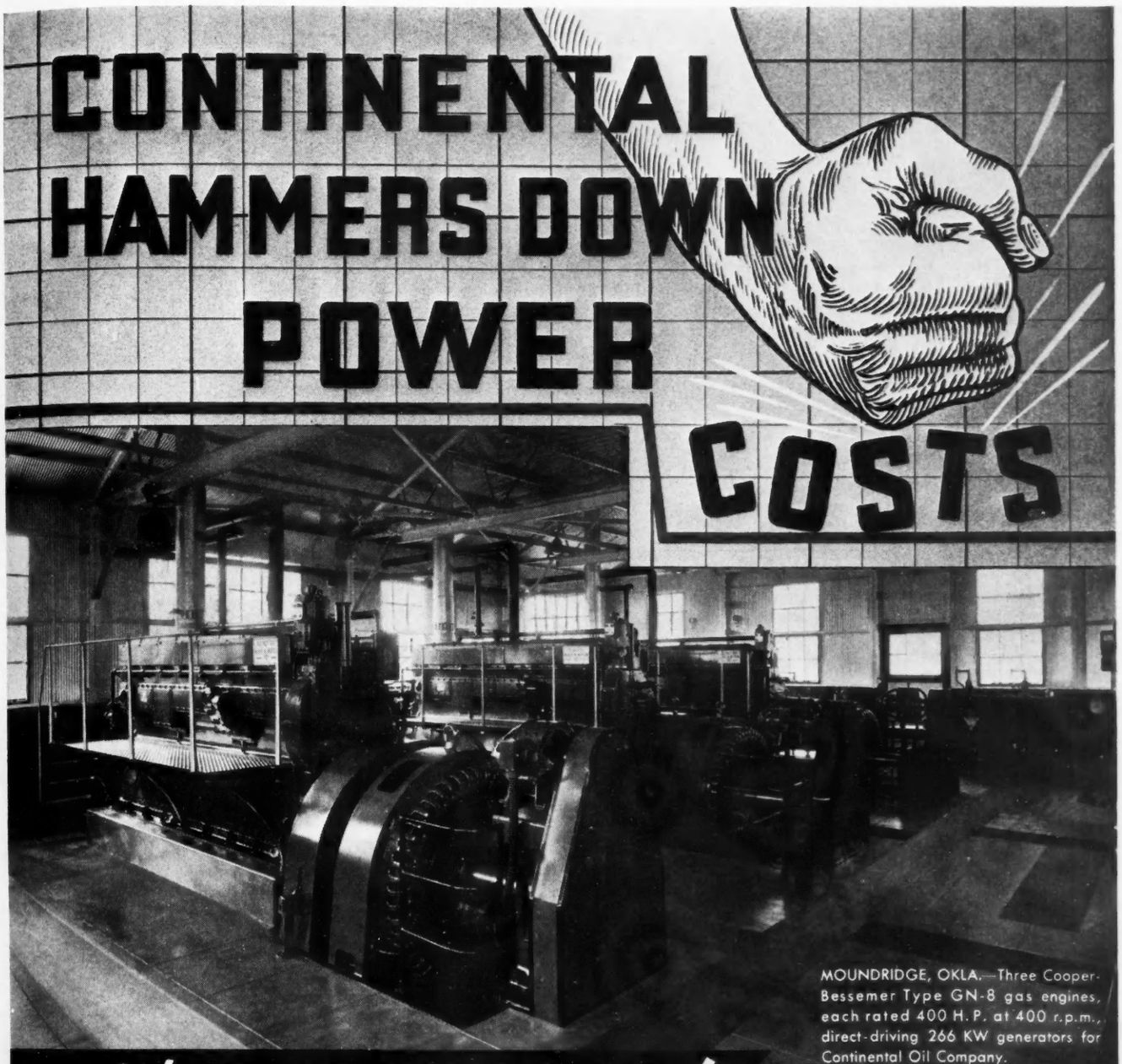
### Function of Grade

The chief function of a tank grade or foundation is the preservation of the tank in a way that will give it the maximum service life. One large tank

**Tank batteries in marshy Gulf Coast fields are built on elevated platforms that are in turn built on piling. The arrangement usually is such that one tank may settle more than another without damage.**



# CONTINENTAL HAMMERS DOWN POWER COSTS



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**This single plant produces all the power necessary for the rotary and cable-tool drilling rigs, for well pumping, and for pipe-line pumping.**

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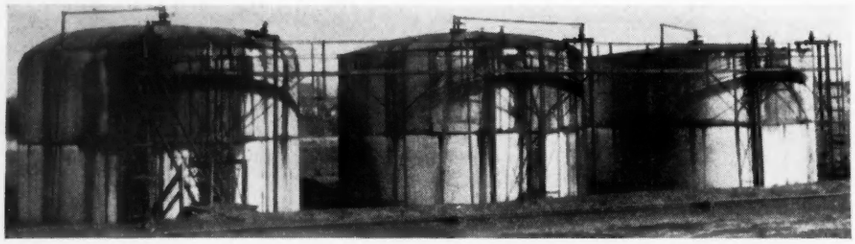


**Failure to provide proper pressure relief connections caused serious damage to the decks of these flow tanks. Relief heads or valves of some kind should be used where tanks are to receive the flow from high pressure wells. The badly damaged tank on the left is the primary flow tank, the less damaged tank in the center is the secondary, and the slightly damaged one at right is the occasional tank. Note the bulge in the first two.**

manufacturer recommends that concrete foundations for bolted tanks be flat-surfaced and pitched toward the drain side at the rate of about three eighths of an inch per 10 feet of diameter. Where earthen grades are used, the same slope is recommended, and in both cases the slope should be toward the drain side. The earthen grades should be porous enough to insure drainage, and extremely "tight" or non-porous soils should be avoided. The slight slope of tank grades provides drainage for both the interior and exterior of the tank. The rate of slope need not be enough to give the tank a distinct tilting effect, or to give it an unbalanced appearance.

Many large oil companies and tank contractors erect tanks on level grades, but exercise care in placing tank batteries in well-drained locations. The earthen grades should be made porous with materials that also offer permanent support. The top diameter of the grades should be slightly less than the diameter of the tanks.

### Drainage Should Be Considered

A very satisfactory concrete foundation for bolted steel tanks is one that allows drainage in all directions from the center of the tank. A foundation of this type is slightly higher in the center to give a mild domal effect. The surface should be ribbed with shallow troughs in the cement, these depressions giving an even draining effect from the higher central portion of the foundation. The shallow troughs or rivulets may easily be made in the fresh cement, and they should radiate in all directions from the center of the foundation.

There are many exceptions to a general rule that may hold in the favorable areas. Electrolysis, sour oil, leaks, and other causes may accelerate corrosion or wear in certain soil areas that otherwise are favorable to a long service life. Where there is doubt as to the permanency of soil as a foundation, tanks should be placed on a more suitable material. Where salt water and acid disposal is a problem, the type and slope of grades are important considerations.

Wood tank foundations usually require care and thought, and improvised grades seldom give satisfactory service. Wood tanks are extensively used in New Mexico, West Texas, and other producing districts, and a good foundation is a major requirement. Both concrete and treated wood make good foundations for wood tanks, but concrete is more commonly used.

### Wood Tank Foundations

Concrete foundations for wood tanks are ordinarily flat surfaced and pitched or sloped toward the drain side at the rate of three-eighths to a half inch per 10 feet in diameter. Drainage troughs should be placed in the surface of the concrete, running from the high side to the low side. The foundation should be constructed so that drainage away from the area around the tank grade will be positive.

A major producing company sets its wood tanks on a wood foundation, and has experienced no trouble with the arrangement. The foundation consists chiefly of a round disc or mat of wood that is placed on the ground in the form of an inverted table, and heavy wood cross members laid parallel on the mat to support the tank. The entire assembly resembles a table top or section of a floor turned upside down. The wood mat is placed on the ground, and gives the heavy supporting timbers an opportunity to find a level resting place. This type of "inverted table top" has proved an effective foundation for wood tanks in the average sour crude oil district.

### Construction Abuses Common

The construction of tanks is no task for the amateur. All inexperienced tank setters, and some who have had experience and should know better, seem to work on the theory that it is a game in which honors go to the one who can twist staves and deck sheets into the most grotesque forms. Tanks represent tangible property and they merit fair treatment. The ultimate cost of moving and resetting a steel tank is much less when the staves, sheets and fittings are handled carefully during dismantlement and reconstruction.

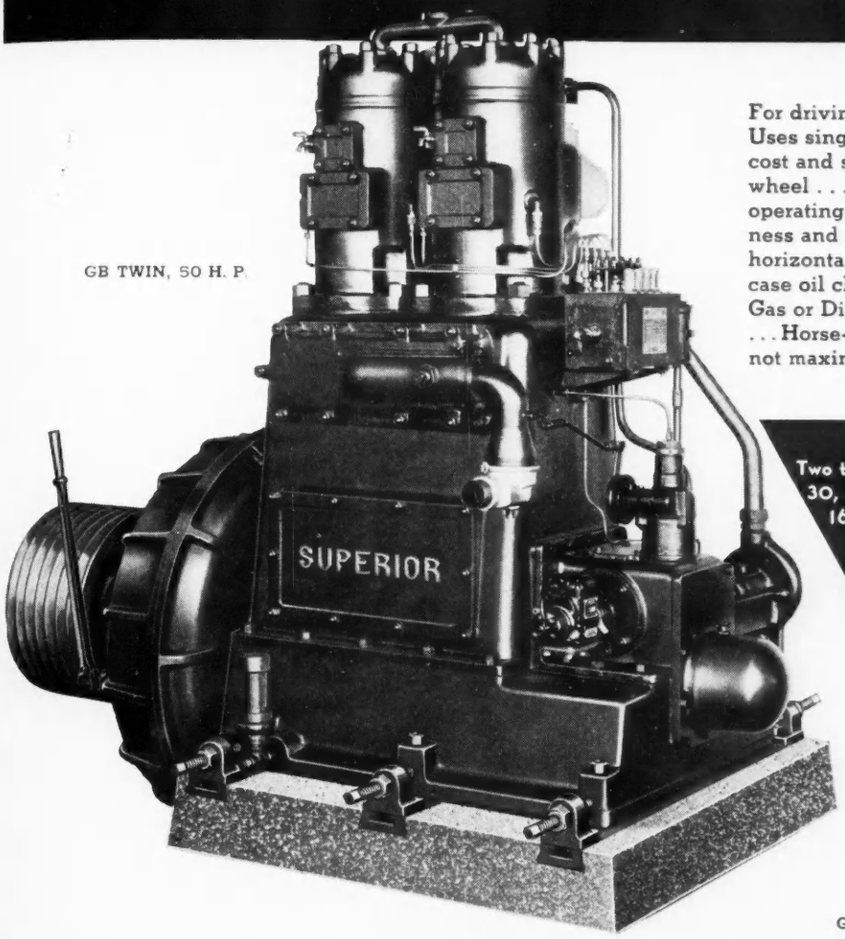
Bolted steel tank staves, bottoms and decks ordinarily are painted by the manufacturer, but several tank contractors favor the erection of unpainted tanks. They contend that the thick coating of paint on seams does not offer a satisfactory bond or foundation for packing. Where the crude oil is light and tends to give off gas freely, the paint between the gaskets and metal often dissolves or disintegrates. The space that once was filled with paint permits oil to leak through the seams. One tank manufacturer recommends that no paint be placed on the seams by the manufacturer, this position being a compromise between the policy of the manufacturer to paint the entire tank and the contractor's recommendation to leave the staves entirely unpainted. Trouble experienced in several light oil fields has been traced to the disintegration of paint between the packing and metal.

### Seam Paint Question

The tank manufacturer usually paints the staves as a safety measure, and is entirely justified in his position where there is likelihood that corrosion may attack the staves before they are used. In one instance an oil producing company requested the tank manufacturer not to paint the seams, since the tanks were to have been erected only a few days after they reached the Gulf Coast. The request was made because of trouble previously experienced after paint along the seams had dissolved.

Several tank batteries in the Tom-

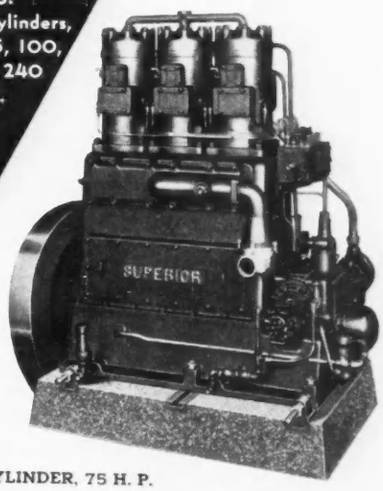
# Superior VERTICAL PUMPING ENGINES




GB TWIN, 50 H. P.

For driving pumping units, geared powers, etc. Uses single reduction gear . . . Small installation cost and space . . . Enclosed clutch or open flywheel . . . Long life, low upkeep and maximum operating hours—due to medium speed ruggedness and 2-cycle simplicity . . . Accessible as a horizontal engine . . . Saves lube oil—crank case oil changes average 90 days or longer . . . Gas or Diesel—convertible (50 H. P. and larger) . . . Horse-power ratings are most conservative—not maximum ratings.

**SIZES:**
Two to six cylinders, 30, 50, 75, 100, 160 and 240 H. P.

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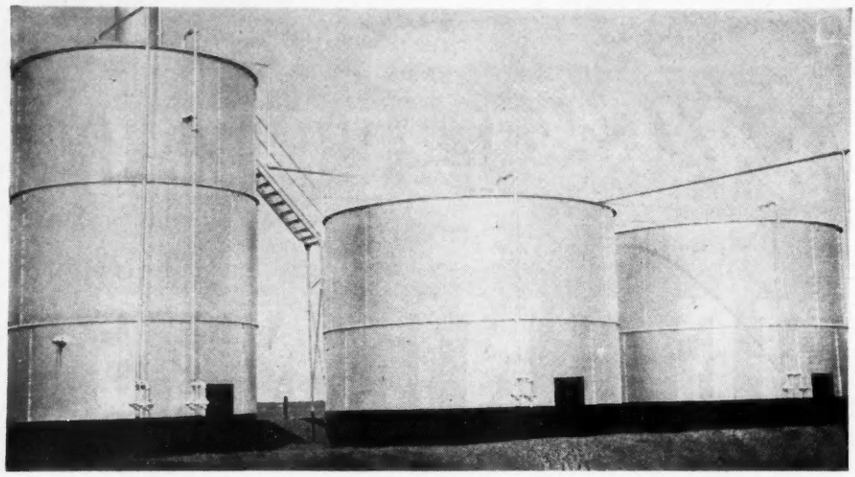

**This is not a new battery. Yet, not one seam leak may be found. Clean tanks add to the appearance of a lease and extend the service life of those tanks.**

ball, Texas, field developed seam leaks after a short time. A careful investigation revealed that the light and gassy oil had dissolved the heavy coat of paint between the seams and the packing. The paint used consisted chiefly of aluminum powder and varnish. The cutting and "washing" action of the light oil and gas in the tanks tended to dissolve the varnish in the paint. The aluminum proper was held blameless for the failure of the varnish.

The recent development of a special rubber gasket that fits in a dished washer has done much to eliminate leaks around bolts in steel tanks. The gasket is placed on the bolt on the outside of the tank and fits between the washer and the tank. When a heavy wrench pressure is applied to the nut and washer, the washer flattens out and squeezes the rubber gasket firmly around the threads. This action seals the space around the bolt threads on the outside of the tank.

### Packing Important

Use of proper packing is important. A large number of tanks at Tomball developed seam leaks after exposure to the hot summer sun. Examination of the tanks after they were torn down revealed the disintegration of the special or experimental packing that had been used only six months before. The packing held tightly until the hot sun and cool nights acted to give a slight warping and twisting action to the tanks. The contraction and expansion permitted the light oil and gas to attack the packing and dissolve it. More than 100 leaky tanks were torn down and rebuilt in a short time in this field. The use of suitable packing is an important consideration in any bolted steel tank construction program.

### Correct Attitude Helps

The attitude of a tank builder toward his work is reflected in the service given by the tank. A careless workman, an over-anxious foreman, or an inexperienced helper in a responsible position can build trouble into a tank that later will be reflected by leaks, poor alignment and reduced service life.

Steel tank staves or sheets for 250-barrel and 500-barrel, one-ring tanks are identical. Since they have the same arc or curve, it is obvious that an adjustment must be made in some way in the random use of these sheets for tanks of either size. The shell of the 250-barrel, one-ring tank is made from 10 staves, while the 500-barrel tank of the same type is made from 14 staves. The staves are ordinarily shaped or curved by the manufacturer to make a circle with a diameter about midway between that of the 250-barrel and the 500-barrel tank. This intermediate diameter means that the tank builder must reduce or "squeeze in" the natural arc or curve of the stave when building a 250-barrel tank, and must enlarge or "stretch out" the arc when building the 500-barrel tank.

Although this fitting of staves is not a difficult phase of tank construction, the departure from the true arc or curve built into each stave should be watched closely. The use of a standard stock stave for either tank size represents a distinct saving to the manufacturer, and this saving undoubtedly is passed on to the purchaser.

### Stave Curve

One large tank contractor believes that 250-barrel and 500-barrel shells should be constructed of staves made and curved for an exact diameter. The average inside diameter of the 250-barrel, one-ring type is about 15-1/3 feet, while the inside diameter of the 500-barrel, one-ring "low" tank is a little more than 21½ feet. The average diameter of the two tanks is about 18 feet five inches, and the curve of the standard stave for both approximates this diameter. The adjustment in the arc of the plates gives them an increased tension that probably does no harm after the staves are in place. This uniformity of staves applies to the one-, two- and three-ring, 250-, 500-, 1000- and 1500-barrel types.

Workmen are inclined to be careless in attempting to bend flanges that do not conform to make proper joint connections. In erecting a tank, care also should be exercised in assembling the side sheets so that they may be bolted up in a manner that will not cause bending at the chime. Either practice may damage a bolted steel tank, and galvanized tanks are especially susceptible to damage from rough treatment.

### Cutting Bolts

When tanks are cut down to be moved, bolts must be removed. The common procedure in several districts is to use a heavy mattock. One stroke of the mattock usually tears off the tops of several bolts, and it is not difficult to realize that this practice is filled with unfavorable possibilities. The procedure is very hard on bolt holes, and where a careless workman handles the mattock the holes are torn out at the edge or increased in size to a point that permits the tanks to leak when they are reset. The resetting of damaged staves involves a difficult construction task. The staves, decks and bottoms are so accurately fabricated during manufacture that with proper care a tank may be torn down and reset many times.

The construction of wood tanks involves practices not employed in the setting of steel tanks. Wood

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## ... WHILE DRILLING-IN, WORKING TUBING, or RUNNING RODS

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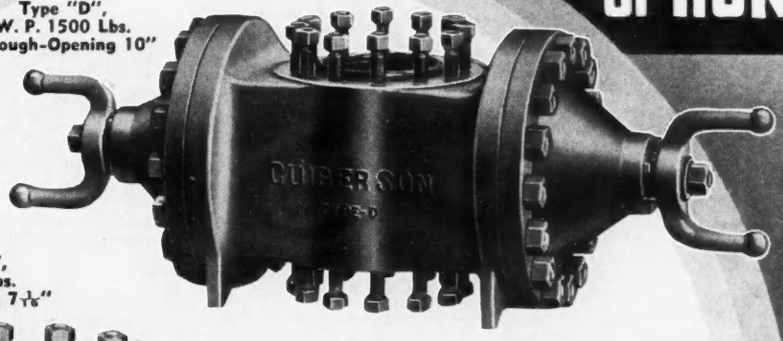
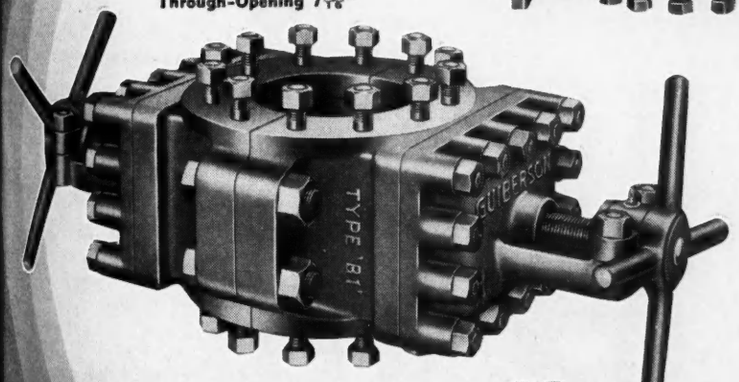
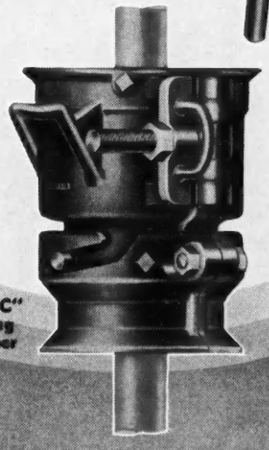
W. P. 1500 Lbs.
Through-Opening 10"




Type "B-1",
W. P. 400 Lbs.
Through-Opening $7\frac{1}{16}$"



Type "C"
Sucker Rod
Stripper



Type "C"
Tubing
Stripper

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These savers quickly pay for themselves through the improved drilling methods which they make possible and the oil they save.

Furthermore, by making a positive seal around drill-pipe or tubing and eliminating any loss of oil, they (1) Prevent fires by keeping oil from scattering or spraying; (2) Prevent oil-soaked, slippery derrick floors, eliminating injuries.

Design and special rubbers of a durable oil resisting compound permit easy passage of pipe collars. Savers are so designed that they can be easily installed or removed. Adapters supplied to fit any type of hook-up.

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BETTER BE SAFE THAN SORRY
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# GUIBERSON

tanks by nature require a high type of workmanship during erection, and when not properly set usually give unnecessary trouble. They are made of redwood staves that normally are not affected by oils and gases that corrode ordinary steel. The standard wood tanks for several years were made with open water decks and grooved staves, but a later type comes with a grooved deck, grooved staves, and a small water supply tank that eliminates the open water deck. In the conventional water seal deck type, the water on top of the tank simply protects the top and furnishes a supply for the stave grooves.

### Heavier Staves

The standard thickness of wood staves has been two inches for years, but the trend toward a heavier stave has been pronounced. The 2½-inch stave was used to advantage by one company, while another large oil producing company has adopted the three-inch stave as standard. Any stave with a thickness of two inches or greater will give satisfactory service if constructed properly and maintained in an accepted manner.

Wood tanks may be taken down and reset at new locations, but only experienced workmen should be employed in this type of construction. Speed in a change of this type is less important than care.

In the construction of wood tanks, full recognition of the importance of proper outlets, connections, sun decks, and incoming lines should be accorded. Makeshift stairways and walkways should be avoided. It is unnecessary to give wood tank batteries a primitive appearance. Many of the newer wood tank installations add to the appearance of a lease and present a more tailored appearance than earlier types.

### Common Sense Needed

The proper maintenance of tanks of every type involves the use of a great deal of common sense. Any man of experience and average intelligence can determine when a tank is out of order from a mechanical standpoint. It does not require the services of a specialist or metallurgist to diagnose troubles that are commonly ignored in the oil fields. A leaky tank or a broken connection of any kind usually gives ample notice that something is wrong. The maintenance of ordinary bolted steel, wrought iron, galvanized, and wood tanks varies, but all suffer from neglect.

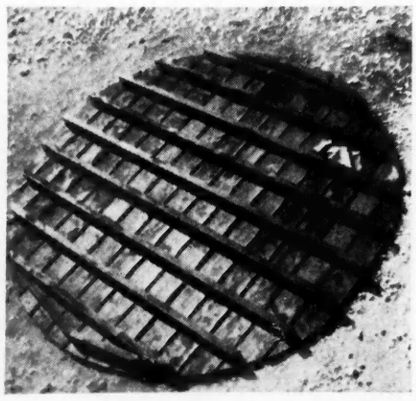
Metal tanks of every type should be painted and kept painted. Galvanized tanks may forego painting for a time, but as a general rule they should be painted to give them an added measure of service. The least corrosive metals should not be unduly exposed to the elements because of their greater resistance to corrosion.

Even if paint were unnecessary as a protective measure, the improved appearance it gives to tanks alone would be worth the added trouble and expense.

Paint selected should be one that meets requirements in a given district. Tank paint is subjected to severe wear and sharp temperature changes, and it is not difficult to understand the need for constant attention. On hot days the sunny side of a tank, particularly an empty one, becomes hot. At night the tank is chilled by the temperature change. These extremes, plus weather of every kind, natural wear, and the usual abuses tax the wearing qualities of any paint.

### Chronic Leakers

Nothing spoils the appearance and efficiency of a tank as much as a leak.



**Wood tank foundation as used in West Texas and New Mexico by a major producing company. Concrete foundations are standard with other companies.**

A chronic "leaker" is never accepted as a perfect tank, although poor workmanship and not poor tank design often is responsible. The best bolted steel tanks occasionally show leaks under severe operating conditions, but it is not impossible to stop leaks.

Often a bolt is removed from a seam to make a connection for taking samples, and in most cases the new connection is not tight. This naturally results in an unsightly leak that could be avoided by using care in workmanship.

When a tank springs a leak, the bolts should be tightened and the leak stopped. Salt water or corrosive fluids may flow through the leak and down the stave, and even where this is not the case the appearance of the tank is marred. Sour crude oil or strong salt water on the outside of a tank corrodes the tank from both directions. There may be a good excuse for failure of a tank from the inside, but failure from the outside usually is preventable.

A poor foundation may settle and produce strains in metal tanks that will cause leaky seams. This type of settling also permits salt water to run to the low side of the tank. A settling foundation will give trouble under all severe operating conditions.

A large Gulf Coast producing company has developed an unusual use of concrete around the base and under the edge of steel tanks. The dirt is removed a distance of a few inches under the entire periphery of the tank, and a thin layer of concrete is placed around the tank. The concrete extends only a few inches under the tank and to a point about one foot from the tank, and serves a double purpose. It prevents erosion from water dripping from the tank, and eliminates unsightly splattering of the lower tank shells. The concrete also improves the appearance of the tank batteries.

### Sloppy Samplers

In sampling oil at the thief hatch or opening at the top of the tank, oil often is spilled on the outside of the metal. The sloppy sampler in a corrosive district shortens the life of steel tanks, and in any district spoils the appearance of the tank. Small tables and sample cans should be provided to eliminate the possibility of such damage, and the sampler should be drilled in the importance of neatness.

Oil producers are becoming more and more gravity conscious. It is a waste of money to purchase gas-tight tanks if the hatch is to be left open. Quite a bit of work has been done by oil country engineers and tank manufacturers in the development of a

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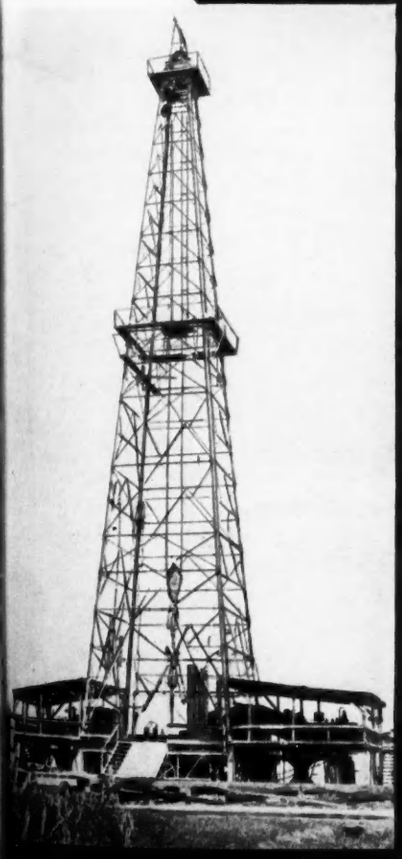

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method for emptying stock tanks so that it will not be necessary to open the thief hatches in emptying the tank into the gathering line. Where air is sucked into the tanks as the oil is removed, corrosion is invited in the hydrogen sulphide areas. The closed system for tank batteries is being installed by a number of companies. In such an installation gas is pulled into the tank as oil is run out, and air is kept from the tank at all times.

Failure to inspect and maintain fittings may cause serious trouble. In the larger tanks failure to check fittings may cause damage when the tank shells are drawn in during emptying. Where proper relief measures are not taken, the opposite or bulging effect may seriously damage tanks during the filling period.

### Checking Corrosion

Where tanks are handling salt water or corrosive fluids of any kind, they should be drained regularly to check corrosion. Adequate drains should be provided. All salt water should be removed from tanks at each draining. Flush draining of an effective type should not be neglected after a well has been acidized.

Special paints and coatings have been applied to the inside of tanks in the corrosive areas, and they have given varying degrees of satisfaction. The chief difficulty has been the failure to coat the average tank so that 100 percent of its corrosive area would be protected. When properly applied, protective coatings are very helpful.

Disposal of salt water and corrosive sludge is important. Salt water should be released through a conductor that will take it immediately from the area. The salt water should not be permitted to soak into the tank grade.

Electrolytic corrosion is very common in several districts. Tank batteries with metal in direct contact with the earth are inclined to attract electrical currents by acting as a ground to pipe lines serving the batteries. These currents in leaving the tank bottoms cause severe corrosion. As a means of stopping this form of corrosion, the Texas Pipe Line Company installs insulators at the gate valves leading to each tank. The practice holds unusual promise. A complete report of this development may be found in THE OIL WEEKLY of September 14, 1936, "Cathodic Protection of Tank Bottoms," by Denis Sneigr.

### Do Not Paint Wood Tanks

Wood tanks should not be painted. Many oil producers, in their effort to keep equipment in a neat and tidy order, unconsciously paint wood tanks with the most expensive paints they can buy. When wood tanks are painted with a paint that forms a tight and impervious coat, they may be attacked in a short time by dry rot. They should be coated with a stain, or simply swabbed with crude oil. It is the nature of the redwood and not the fault of the paint that causes trouble.

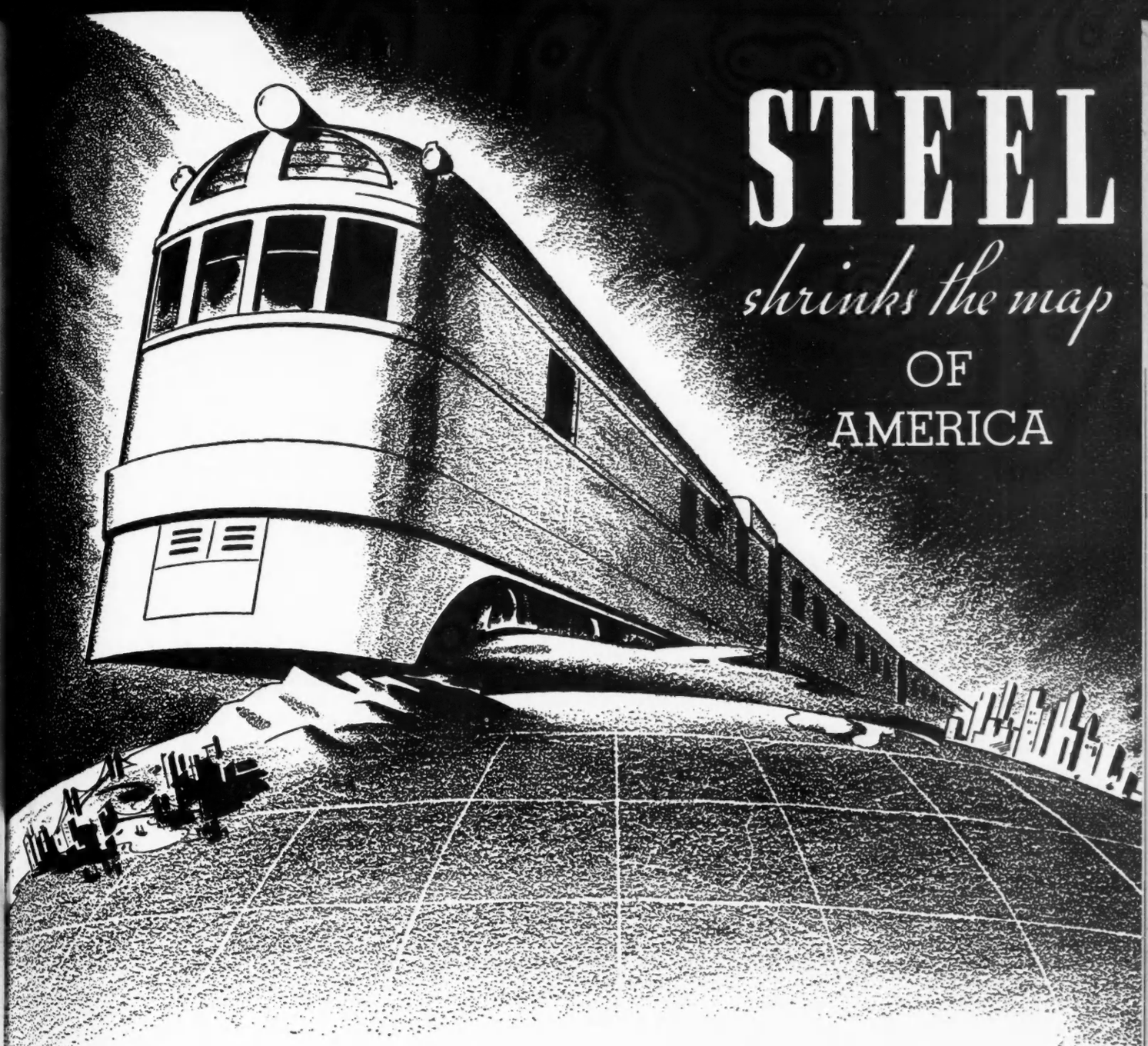
Wood tanks show a lower heat loss than metal tanks, and for this reason are extensively used as treating tanks in several areas. It is an easy matter to overheat or cook the wood. Redwood will withstand temperatures between 175° and 200°F. for short periods, but it is advisable to fix the maximum temperature at 150° to 160°F. A uniform temperature throughout the oil body of 130° to 150°F. will accomplish in most cases all that can be done in heat treatment, and it is well to remember this in ordinary treating. A temperature above 160° may not loosen the bands of wood fibre, but it will cause expansion that may produce leaks between the staves.

Vapor pressure and gas-tight wood tanks should be provided with means for keeping the upper deck wet so that it won't be warped by the sun. This protection often is neglected, but it should not be. Recent improvements have facilitated the use of water on tank decks.

Wood tanks should be fully protected from the sun. Exposure to the sun causes the outside of the tank to shrink. This shrinkage slightly opens the seams and causes water to leak from the grooves. Sheds of some kind are recommended by engineers who have reported on damage from exposure to the sun. Oil companies are hesitant to build houses or sheds over wood tanks because of the gas and fire hazard, but sheds with sides dropped only part way to the ground and with the vent free above the top deck should not constitute a fire or gas hazard.

The maintenance of tanks, wood and steel, involves simple practices that give added service life. A tank rusting from the lack of paint, sagging because of a weak foundation, or leaking because of poor construction, presents a plain case of neglect. The attitude of the operator largely determines the service life of a tank.

**Reprints of the foregoing article are available at nominal cost. Write The Gulf Publishing Company, Houston, Texas.**



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25-4A

# "Go-Devil" for Cleaning Diesel Oil Leads

By CHARLES C. LYNDE

OIL for the main bearings of the three 600 horsepower Diesels was delivered through half-inch pipes from the distribution manifold of the submerged gear-type oil pump, and these leads were blown out with compressed air each time the pipe line station was shut down for engine overhaul.

Not until one of the lines stopped up was the possibility of partial clogging suspected, although depositions of sludge and carbon had been noted elsewhere in the engine on previous overhauls.

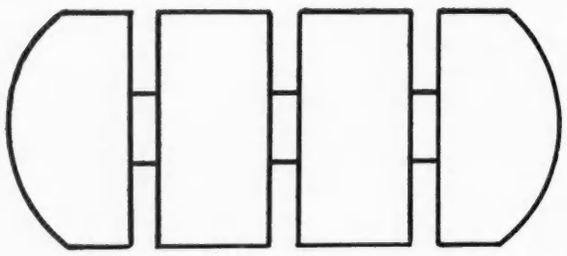
Several other methods to clean the lines having failed it was decided to try a miniature scraper modelled after the "go-devil" used for cleaning the company's crude oil lines. Since the oil pipes were nominally of half-inch diameter, the actual inside measurement was 0.622-inch, or almost exactly ⅝-inch. Inspection of the outside of the various bends in these leads showed that there was practically no flattening and that the bore there would be equal to that on the straight runs.

### Making the Cleaner

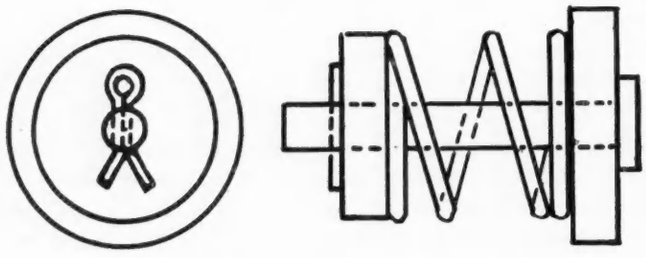
Since the turns were made to a three-inch radius, it was apparent that the scraper must be extremely flexible to negotiate these turns, and it was made in two parts, a scraper proper, and a wad or driving element.

The cleaner itself was made up of a rubber washer, cut ⅝-inch in diameter, and having through it a one-inch long shank made from the head end of a 20-penny nail, drilled near its outer end for a small cotter pin. A half-inch steel washer, ⅛-inch thick and drilled to fit snugly over the nail, was slipped over the nail, compressing a half-inch coil spring against the rubber disc forming the lower washer.

The driving element was made from a piece of tough rubber, 1½ inches in length, and turned to ⅝-inch diameter, with three deep grooves cut into it to leave 3/16-inch of rubber at the center. This driver could be bent to fit a circle of two-inch radius, while the four full diameter sections would maintain contact with the sides of the oil line and pack off properly even when so bent.



**Side view of rubber driving plug.**



**Plan and side views of oil lead "Go-Devil."**
**Scale, approximately 2:1.**

### Compressed Air Used

To clean a lead with this "go-devil" it would be disconnected at both ends, the scraper section pushed in and the rubber plug forced after it. Then, with a rag wrapped around the other end to prevent splattering, compressed air was admitted behind the rubber plug. With 100 pounds pressure to the square inch behind it, the scraper would carry before it deposits of sludge and even fairly hard accretions of carbon particles, emerging from the farther end of the line with almost the speed and hitting power of a shotgun charge if the air pressure was maintained.

Final cleaning of the oil leads was given by removing the spiral spring from the scraper section and replacing it with a pad of copper shavings; this being shot through the lines with air as was the other.

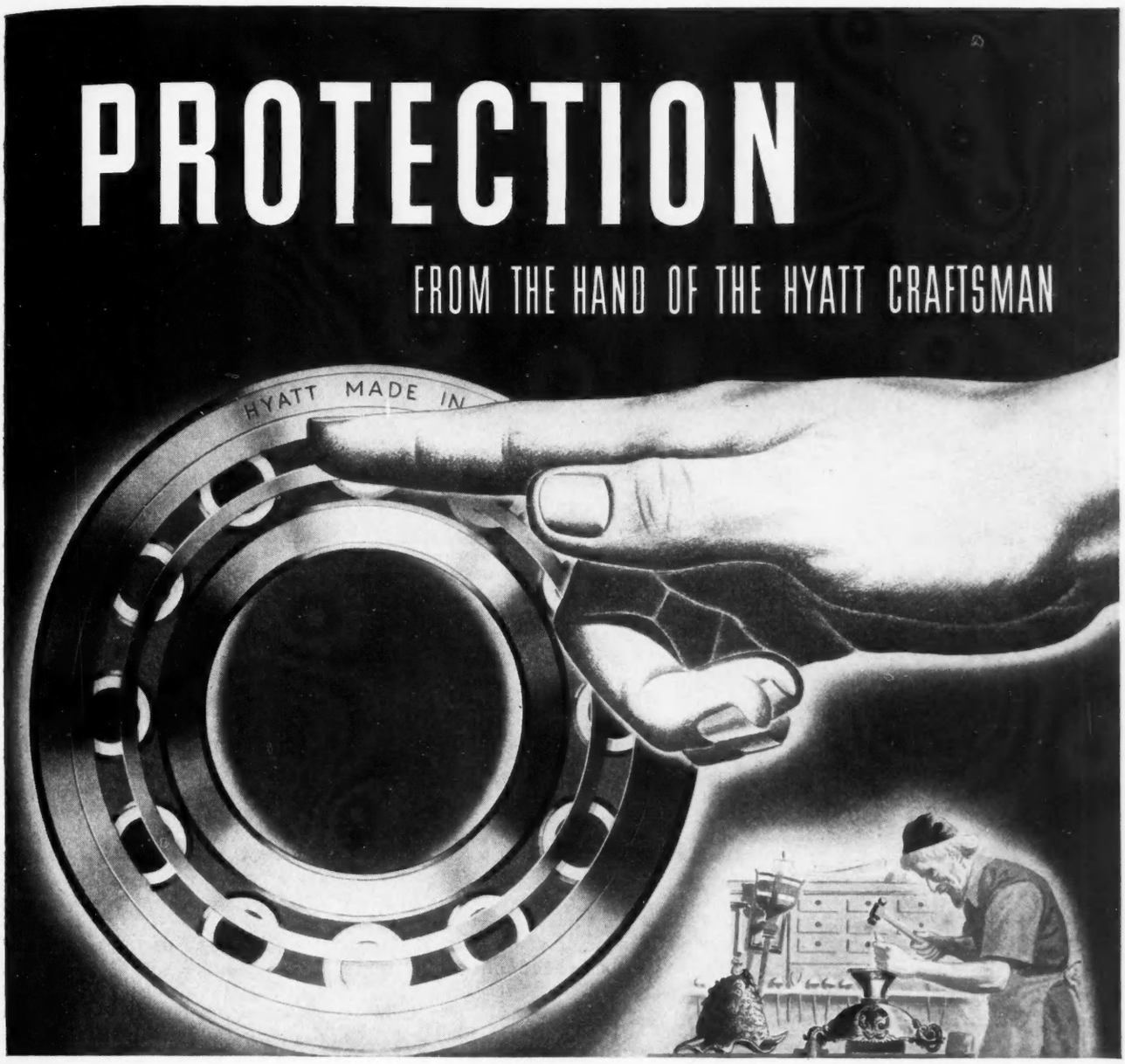
Lines cleaned with the device flowed clean oil when tested, and, once cleaned by this method, were thereafter checked with the same device at each overhaul, instead of being merely blown through as had been the practice at the station.

The driving plug was turned on an improvised lathe, using a section cut from an old casing protector as raw material, and freezing the rubber so that it was as hard as, and cut much like, a block of bakelite or similar material.

Had the "go-devil" hung up in a line and resisted maximum available air pressure at the station, it could have been recovered, of course, by reverting to the original plan and cutting out a section of the air lead. As this contingency did not arise, the Diesels still have their long, one-piece oil leads, kept clean.

# PROTECTION

## FROM THE HAND OF THE HYATT CRAFTSMAN

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# HYATT
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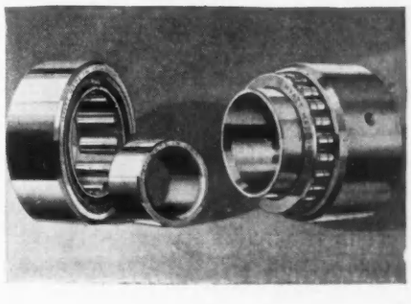

**A glance down the tops of 15 horizontal, direct-connected, natural gas fueled power ends and compressors. Total potential horsepower of the station is 2,550, exclusive of auxiliary installations. At discharge of 425 pounds per square inch, approximately 60,000,000 cubic feet of gas can be handled.**

# MODERN *Station Engineering*

## INCORPORATED IN GAS COMPRESSOR

By FRANK B. TAYLOR, Staff Writer

CONSTRUCTION is progressing rapidly on the 15-unit natural gas compressor station being built in Wheeler County, Texas Panhandle, by Lone Star Gas Company on its 18-inch main line from field production. Gas from the area is produced from the dolomitic stratum of the Granite Ridge sector, the productive area generally tending northwest and southeast, and the rock pressure generally falling below 400 pounds to make the repressuring of large volumes a necessity. During months of heavier withdrawal working pressures of wells frequently fall below the minimum required for flowing the necessary volumes of production. The new plant is similar to others in being a pick-up from the gathering system operated under well pressures.

The field suction line into the station is 18-inch, the discharge being the same. From the plant the gas will be passed to Hollis where natural gasoline is to be extracted. From Hollis, the transmission will be direct to the major station at Petrolia. Construction is expected to be advanced to a point where partial operation can be carried on by December 15.

Site of the station is one mile north of the town of Shamrock, Wheeler County. Storage facilities were already available near the location. Heavy concrete foundations are under all structures. The main engine room parallels the main line where it passes through SW Section 64, Block 17, H&GN Survey.

### Unit Pressure Lubrication

An innovation in compressor installations is the manner of lubrication. Instead of individual feeds for each unit and to each bearing, lubrication systems will be unitized and pressured from a central location. Two oil circulation pumps will hold a constant pressure of 15 pounds per square inch on the lines. The pumps will be gas pressure operated, and to assure even distribution during cold weather, gas heaters will be installed on the lines to raise the temperature of the lubricant. Gauges will show the pressure at different points of the system.

All connection of lines within the station grounds is by welding. Formed and cut fittings are being used wherever possible. The intake and discharge lines are to be supported above ground on concrete supports.

A separate auxiliary will be constructed to serve the station. Main generators will be two 260-kilowatt units driven by two 8-cylinder, automotive type gas engines. Compressor for starting air, water pumps, and other related equipment will complete the auxiliary installation.

Water from the City of Shamrock is to be used as cooling water for the various units. However, instead of being used as supplied, a purification system will be constructed in conjunction with the plant. Buildings will be heated by fans driving air blast through steam coils mounted near the roof.

With all units operating, the rated capacity of the station is calculated at 60,000,000 cubic feet per day at a discharge pressure of approximately 425 pounds per square inch.

# THE *Practical Interpretation* OF *Drilling Mud Tests*

THE value of mud control is debated no longer. As an important factor in good drilling practice it has come to stay. However, many practical field men feel that mud "technology" is out of their reach, because so many variables must be taken into consideration that to form a composite decision as to just how "good" a mud is becomes an annoyance. To the organization that can afford mud testers and laboratories the solution of the field man's difficulty is an easy one. But where this is possible for one concern, there are many others who cannot do so. Mud control, to be effective, should be reducible to terms which are of significance to the tool pusher and the driller—terms in which they can think about test results in relation to what the job is, whether it be drilling, running casing, running a liner, or getting ready to cement.

The gradually increasing volume of literature on mud indicates that many mud properties are beginning to be better understood, yet the terms in which such an understanding takes place are often incomprehensible to the driller, the derrickman, or the pusher. For the moment then, let us take some liberties with the chemistry and physics of mud and think about the practical interpretation of mud tests, as far as possible, in terms which may assist in establishing a few points of reference that will give a "handle" to each mud test and make it assume a more definite relationship to the other tests.

### Case History Method

At the outset, one important point should be kept in mind. Muds made from natural clays, or muds made by the hole, are like people—no two are exactly alike. Mud tests, on the other hand, resemble the notes in music—they can be "read" intelligently only with a background of experience and practice. The type of practice which leads to the best experience is the accumulation of lots of mud tests in relation to all types of conditions encountered. A casing is run. What type of mud was used? Its weight? Its viscosity? And so on.

For a long time the results will appear to be meaningless—then, a tough casing job will arise. Is the mud right? On looking over the records, instances will be found which give the properties of muds used on previous successful casing jobs. These data then give the basis upon which to proceed with confidence in the unknown situation. Scientists and engineers call this the "case history" method of building up a fund of reliable information. Many of the largest concerns started gathering information on mud this way—and still do, even in spite of the results obtained from expensive research and development programs.

Another important point is to keep in mind what the overall function of a drilling mud is, in relation to the specific conditions encountered. Every driller wants a mud that will properly lubricate his bit and drill pipe and permit good table speeds without a high torque. The mud should also bring all the cuttings to the surface, and at the same time hold cuttings in suspension when round trips are necessary. As fresh hole is drilled, the mud should lay down a thin mud cake sufficiently impervious to the passage of water to prevent further growth in thickness, with the attendant danger of sticking the drill pipe, as well as the sloughing of formation. During round trips the mud should not only hold the cuttings in suspension and prevent their settling, but should also be of a composition that will not permit the mud solids themselves from settling and packing. When water or gas are encountered, the mud column should have a sufficient head to control these elements and control the swabbing action when the tools are pulled.

### Sampling

For mud tests to have any meaning it is of great importance that a sample be obtained under conditions representative of the stream. It is a common occurrence to see a field man take a mud sample from the ditch, and then let it lie around until some convenient time for making the tests on it. A fundamental point which should be kept in mind is that drilling mud in motion will give decidedly different viscosity test results than the same mud after it has remained quiet for 5 minutes or longer.

This means, then, that a sample should be tested promptly after it has

been taken, and no opportunity given for it to lie around. The reason for the importance of getting a mud test right after the sample has been obtained is that mud begins to gel on standing quiet. If tests are made on a gelled mud the viscosity reading will not be representative of the viscosity of the mud as it flows in the ditch.

The point at which the sample is taken also is of importance. Now that drilling wells are equipped with vibrating screens it is well to catch the sample after the mud has passed through the screen in order that a clean sample will be procured, in other words, a sample free from cuttings or any other material which the screen should remove. Some occasionally catch samples ahead of the screen and discover that the test equipment becomes plugged or impeded by the presence of coarse solids which the screen would have removed.

Under normal operating conditions the tests should reflect the properties of the mud going back into the hole. Such a sample is best caught from the ditch somewhere below the screen. Often it is of value to compare the properties of the mud coming out of the hole to the properties of the mud going back into the hole. This can be done by obtaining a sample at the conductor pipe outlet ahead of the screen, removing the cuttings, and subjecting it to the same tests given to the sample taken below the screen. Some operators lay so much stress on the properties of the mud entering the drill pipe that they place a high-pressure valve on the riser to the kelly hose. Through this valve can be bled a sample of mud as it leaves the pumps.

When the mud becomes gas-cut a comparison of outcoming to ingoing mud is of considerable reference value. It will be noted frequently that the variation in weight can be as much as ¾ to 1½ pounds per gallon between a sample taken at the conductor pipe and a sample taken below the screen, or from the discharge of the mud pump. Inasmuch as a 20:30 screen is a popular size for vibrating screen installations, it is handy to have a 30-mesh screen included among the mud test apparatus in order that outgoing samples may be screened quickly through the 30-mesh screen before testing.

Now that funnel viscosities are being determined with a funnel full of mud (approximately 1500 cc's) a two-quart can, or pan, with a handle, is a handy container in which to obtain the sample. Too much stress cannot be laid on the importance of taking a sample and then quickly taking it to the test apparatus and putting it through the various tests as rapidly as possible.

Cleanliness is another essential point in enabling good mud tests. A good sized container full of water should be on hand so that the mud funnel, hydrometer, etc., can be thoroughly washed promptly after each test and then hung up on suitable hooks to drain and dry.

### Mud Weight

A question often asked is, "How do I know what mud weight to carry?" As a general rule, experience will teach more about the best mud weight to carry, but a few points are of value as a general guide. Where gas, water or high-pressure oil sands are not encountered, the weight of a mud is of little importance. To illustrate, where conditions will permit the use, a 67-pound mud made of bentonite and water is just as effective as a 72- or 75-pound mud.

Mud is made up of solids, water, and colloidal material. For each type of clay, or formation from which mud can be made by the hole, there is an optimum balance between these three essential relationships which will give a mud which does not settle out a lot of free water, or become so viscous that it cannot be pumped. If gas or water control is not a factor the operator need only adjust his mud stream so that overall mud properties are obtained which give a good viscosity, gel strength, cake thickness, etc., and let the weight fall where it will.

If gas or water, or a high-pressure oil sand is encountered it is obvious that the weight of the mud column must be increased. This also holds true for certain types of heaving shale. Just to what weight it should be increased is best determined by trial. Weighting material is added to increase the mud weight, say ¾ of a pound per gallon, and the effect on the control of the hole noted.

Drilling with blowout preventers has reduced materially the hazard of unforeseen changes which lighten the mud column. Examples of this are the many instances where mud tests show that the mud column is being lightened either by water, or by gas. If an attempt is made to pull the drill pipe the well begins to flow back. Cases such as these are corrected quickly by pumping up the blowout preventer, and then weighting up mud from surface storage to ¾ or 1½ per gallon over its previous weight, and then circulating until the newly weighted mud column becomes equalized. If the first addition of weighting material does not produce the desired effect, the weight is then increased.

As a general rule, a mud weight of 9.6 or 9.8 pounds per gallon is ample for most jobs, and the relationship of solids to colloids at this weight give other characteristics that are satisfactory. In fields where a great deal of drilling has been done and where subsurface markers are known for gas, water or oil the weight of the mud used can be adjusted to fit known conditions. In the case of the wildcat, one man's guess is as good as another's and the only practical basis is to continue with as low a mud weight as will give the other desired properties in the mud stream until some definite indication warrants an increase in weight.

Unless conditions warrant, it an excessive mud weight should be avoided. Because mud weight is an indication of how much solids the water phase of the mud is carrying, it follows that a high weight puts an additional, and often unnecessary, burden on the mud pumps and on steam requirements. It might be of value to some to think of mud weight as "pressure." If gas, oil, or water are not encountered then why maintain a high mud "pressure" (column head) on the bottom of the hole?

### Viscosity

The Marsh funnel and the Stormer viscosimeter are still the two most popular methods of determining mud viscosity. Under this heading the comments given below are confined chiefly to the use of the Marsh funnel, and the test is to be understood as made according to the A.P.I. tentative mud test procedure.[2]

The A.P.I. procedure proposes the use of a funnel full of mud (approximately 1500 cc.'s) and the determination of the time in seconds required for 1000 cc.'s to pass through the 3/16-inch nozzle. Since the introduction of the 1500:1000 procedure many users of the old 500 cc.'s in and 500 cc.'s out procedure have experienced difficulty in reconciling the test results by the old method to those obtained by the A.P.I. full funnel procedure.

To those who have this difficulty it might be helpful to remember that by the old 500 cc.'s method the viscosity reading on plain water was approximately 18 seconds. In the A.P.I. full funnel method the viscosity of water is approximately 29 seconds. This would mean that ratio of these water viscosities by the two procedures would be about 1.6. For general pur-

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poses, it is helpful to multiply mud viscosities obtained by the old 500 cc.'s method by 1.6 to approximate the equivalent viscosity by the A.P.I. method. For instance, a 30-second viscosity by the 500 cc.'s procedure would be around 48 seconds by the A.P.I. full funnel method.

By taking a liberty with the more careful and exact definitions of mud viscosity[5] it is safe to say that the practical man can think of viscosity as a function of mud in motion. As will be shown later under the heading of gel strength, it is possible for a mud to have a high viscosity and low gel strength. Another way in which this same statement might be given is that most of the solids, or clay particles, making up a mud are comparatively coarse. A smaller percentage of the solids are the gel-forming colloidal material which suspends the inert, coarse solids and prevents them from settling out, and supply the other property commonly spoken of as "gel strength."

Mud viscosity is of importance when thinking of the load which a mud pump has to carry. Usually then, mud viscosity is a property of the mud when in motion, whereas gel strength is an important property of the mud when it is not in motion. The inert solids along with the colloidal material contribute to the viscosity of a mud, whereas the gel strength of a mud is more particularly caused by the colloidal content alone.

An old rule which has been well thought of by many operators is what is known as the "rule of 30," and expressed as "30 percent of solids and 30 seconds through the mud funnel (500 cc.'s)," or about 48 seconds through the mud funnel by the A.P.I. method. As a general rule, a 9.6 or 9.8 pounds-per-gallon mud with an A.P.I. viscosity of 45 to 50 seconds can exhibit satisfactory viscosity where the other important properties fall within practical limits. Halbouty[1] has written an instructive discussion on how to determine mud viscosity with the Stormer viscosimeter.

### Gel Strength

Gel strength is an important mud property which has been avoided by many practical men because of the technical sound of the term. Such is not the case, and in time to come many more will keep records of this important property than are doing so at present.

Many drillers have had the experience of having a mud on a job which had a low funnel viscosity, yet when circulation was stopped for any reason it was noticed that the mud gelled to what might be termed the consistency of a heavy milk curd. In these cases, after a round trip with the drill pipe, mud pressures of sometimes three times the normal circulating pressure were required before the mud would "break" and circulation restored.

This resistance offered by the mud is directly a function of its gel strength, or in other words the strength, or "resistance" of the gel to being broken again after it had once formed when the mud had stopped circulating. Other cases are fresh in the minds of many a driller and tool pusher where, after a round trip with drill pipe, bottom could not be reached again because most of the cuttings in the mud column had settled to the bottom. This is largely due to a mud with a low gel strength.

Gel strength often causes trouble where gas is encountered, and many will recall where one drilling rig has a mud that easily handles gas, while the rig right next to it, and probably drilling through the same formation, cannot get rid of the gas, with the result that the mud becomes badly gas-cut, the mud pumps become gas-locked, and great deal of lost time is experienced in getting the mud stream back into shape.

These, and many other illustrations, lead to the important observation that a reasonable gel strength is needed by all muds in order to properly suspend cuttings in the hole, and prevent these cuttings from settling. A high viscosity will not necessarily prevent the settling of cuttings if the mud has a very low gel strength. It is chiefly the gel strength which properly suspends the cuttings and keeps them suspended until circulation is resumed and they are circulated to the surface.

Gel strength also plays an important role when gas begins to show, because the gas bubbles which are trapped by a mud with a high gel strength are held more tenaceously when the mud reaches the surface than is the gas brought to the surface by a mud with a low gel strength. In fact, the reduction of gel strength is the principal objective when the sodium tannate[3] treatment is given to a gas-cut mud. The reduction of the gel strength by the tannate brings about the rapid release of the entrained gas bubbles and restores the mud properties before its return down the hole.

As mentioned above, gel strength is closely related to the amount of gel-forming colloids which a mud contains. Because of this, a mud with a satisfactory gel strength also will usually lay down a thin, rather than a thick mud cake. This is because the colloid content of a mud contributes the materials which prevent the absorption of excessive amounts of water from the mud by the formation drilled.

How is gel strength determined? The method described by Halbouty[1] which involves the use of the Stormer viscosimeter is a simple method which any field man, after a little care and practice, can perform satisfactorily. There are other methods[5] for determining this important property but many still prefer the results obtained by using the Stormer viscosimeter.

As explained by Halbouty[1], the gel strength is determined in terms of the number of grams of weight required to produce a barely perceptible movement of the spindle on the Stormer viscosimeter. The first, or "zero time" reading is determined promptly after the mud has been rapidly agitated by the viscosimeter spindle. After the number of grams have been determined which are necessary to bring a perceptible rotation of the spindle, the mud is allowed to stand quiet for 10 minutes. A few seconds before the end of the 10-minute period the number of grams necessary to bring about a perceptible movement of the spindle are determined. The results are expressed as the "zero time" gel strength (in grams) and the 10-minute gel strength (in grams).

Generally speaking, the gel strength of a good 9.6 or 9.8 pounds per gallon mud is approximately 10 to 15 grams for the "zero time" reading and 30 to 40 grams for the 10-minute reading. However, here again, it is well to point out that the accumulation of case histories will give a more adequate basis upon which to definitely say just at what gel strength any particular mud behaves the best. A little practice in the determination of gel strength and the careful and methodical recording of the results obtained will invariably establish for any operator the test values which correspond to satisfactory mud properties, when the gel strength results are balanced against viscosity, cake thickness, and weight.

### Cake Thickness

As a well is being drilled, the weight of the column of mud presses outwardly against the face of the formation through which the bit has cut. Most formations are quite porous and permeable and from this it follows that with mud pressing against the face of the formation water is

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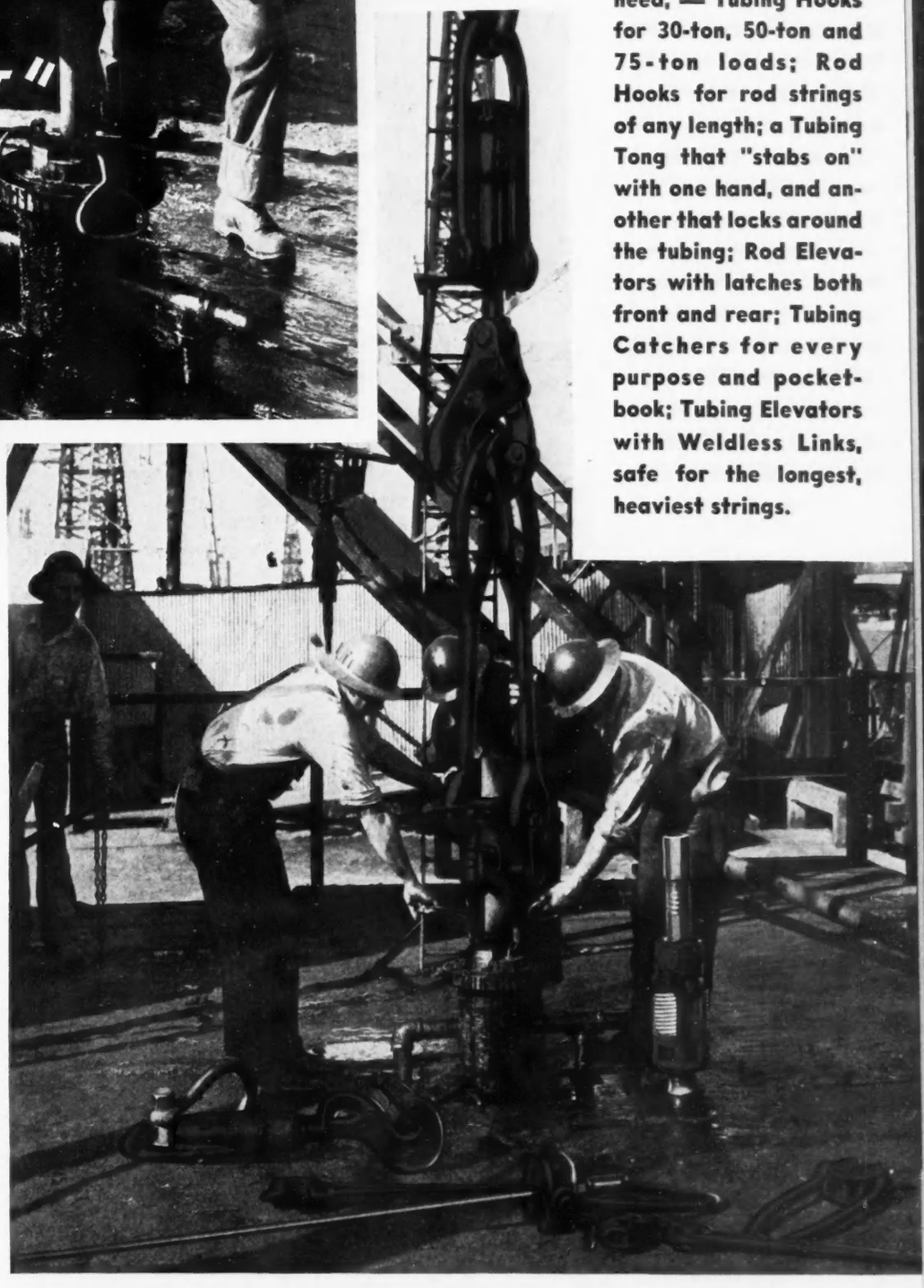

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bound to be given up by the mud and absorbed by the formation. This causes the face of the formation to act as a filter and a mud cake is built up, whose thickness will depend upon how freely the water which the mud contains can be pressed out through the cake.

Much experimental work has shown definitely that the gel-forming colloidal material contained by a mud contributes the very fine particles which can fill the spaces between the coarser clay particles in the mud, and thereby prevent the passage of large amounts of water. This experimental work also has shown that the amount of water given up by a mud is directly related to the percentage of the colloidal material the mud contains.

In view of this the practice has grown steadily of supplying these essential colloids from outside sources to those muds which do not have a sufficient percentage to lay down a thin, water-proof mud cake.

To the foregoing remarks, the natural reaction would be, "Well, supposing that mud cake thickness is an important property, what can be done about its determination in the field?" The answer to such a query is that different types of small filter presses are available which can be used right on the rig floor to determine the cake thickness built up by any particular mud. One such instrument has been described by Jones.[4] Without discussing the merits or demerits of any particular kind of filter press, it is sufficient to say that any small portable press which is simple to operate generally can be depended upon to give the necessary information.

Granted that a portable press is used to determine mud cake thickness, what interpretation can be placed upon such a test? Opinions vary as to the exact interpretation to be placed on the results of a filter press test. Some contend that the pressure at which the test is made makes little difference. Others contend that the volume of water passed is more important than the cake thickness deposited. Others feel that the reverse is true.

For the purpose of this discussion let us consider the interpretation of the results obtained with a portable filter press wherein the test conditions require that 3000 pounds per square inch be exerted on the sample of mud for exactly one hour and at the prevailing atmospheric temperature at the time the test is made. If a mud containing practically 100 percent gel-forming colloids is prepared from bentonite and water it will be found that under the aforementioned test conditions a cake of close to 3/32 of an inch in thickness will be formed.

If this cake thickness (3/32-inch) is made by a pure colloidal mud, it can then be used as a point of reference from which to compare the cake thicknesses laid down by unknown muds. For example, suppose that a mud gives a cake thickness of 6/32 of an inch. This cake thickness can then be thought of as being twice the thickness of a cake laid down by a purely colloidal mud, and so on.

As a general rule a mud cake 7/32 of an inch thick is considered quite a satisfactory test figure. When the cake thickness reaches 10/32 of an inch or higher, samples from the mud stream should be treated in order to try to reduce the cake thickness to around 7/32 of an inch. These comments should be taken as a generalization, however, as here again experience with different types of muds under different field conditions indicates more satisfactorily what the best overall cake thickness is which any particular clay, or formation drilled, will lay down.

Some operators contend that it is a waste of time to try to adjust the colloidal content of a mud. Contradicting this are the experiences of many who find that the trouble taken to determine the amount of bentonite which may be added to reduce the cake thickness without seriously upsetting the other essential properties will often pay big dividends, particularly in the fast drilling of highly porous sands or shales. There is incontrovertible proof that thousands of dollars have been spent on fishing jobs as the result of twist-offs brought about directly by the formation of thick, hard mud cake.

Another argument in favor of the control of cake thickness is the growing tendency to drill with full-hole drill collars. With this type of equipment it is needless to observe that the rapid filtration of moisture from the mud used on such jobs will invariably create the risk of a quick bind which, coupled with the high table speeds now used spells only one thing—an expensive twist-off.

### Sand Content

An important practical significance of the sand content of a mud is its abrasiveness. Many formations yield a sand which is sufficiently fine to get by the mud screens and which gradually increases in volume as drilling progresses, finally reaching a point where its undetected presence becomes noticeable when the valves begin to fail on the mud pumps. On opening the valve boxes it is found that the valve seats have been grooved by some abrasive material. This abrasive action also can become apparent by damage done to the kelly hose and to the enlargement of bit eyes. The internal abrasion of the drill pipe itself has become troublesome in many instances.

A.P.I. has proposed two methods for the determination of the sand content.[2] One is called the Classification Method and the other as the Centrifugal Method. The classification method is a simple test and involves diluting a measured portion of mud with water and then allowing a fine jet of water to carry away the mud solids, leaving the coarse abrasive material as a residue. After the test is made the abrasives settle to the bottom and are measured in percent by volume. Jones[4] mentions that the percentage of abrasives should not be allowed to exceed 5 percent by volume. Other operators allow the increase to reach as high as 10 volume percent. The value given by Jones is preferable.

### pH, or Hydrogen Ion Concentration

As explained in a previous article[6], as far as the interpretation of pH is concerned, it is considered good practice to try to maintain the pH between the limits of 9.0 and 9.5. In some muds a pH value much below 9.0 results in an instability of the gel-forming colloids with the result that the gel strength becomes too low and free water settles out of the mud on standing. On the other hand, where the pH is much over 9.5 the opposite effect often becomes noticeable and muds begin to "curdle," or flocculate. In these latter cases the application of chemical treatment to reduce the pH will often restabilize the gel-froming colloids and the net effect will contribute greatly to an adjustment of the overall physical properties.

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**Hodell's paper, Parts I, II and III of which were published in recent issues of The OIL WEEKLY, was presented in full before the American Petroleum Institute in Chicago November 12. The statements and opinions expressed herein are those of the author and should not be construed as official opinions or actions of the institute or of The OIL WEEKLY.**

# *Circumferential Field Welding of Casing*

By L. R. HODELL, Carter Oil Company, Tulsa

## PART IV

*Parts I, II, and II of Hodell's paper went into a discussion of the welding problem itself, the floor problem. Then they told of a series of tests made in considering the joint problem and entered into a discussion on the rate and cost of running welded casing. Six tables and 18 charts and pictures were used in illustrating the first three parts. Part IV follows:*

WE FIND that actual time consumed by the welders simply in welding the butt joint is about 50 percent longer than in welding the bell-and-spigot joint. It is on this general basis that we pointed out that in the over-all welding time about 25 percent more bell-and-spigot pipe could be run than butt-welded pipe. These general relationships, also, allow us to point out the extent to which the running of casing can be speeded up by ratholing and running two crews simultaneously. If the two crews can weld twice as fast as the one, it is apparent that they will increase the amount of pipe run only about one half over what can be run with the single crew. This, of course, is due to the fact that the additional crew can only cut down on the welding time by 50 percent, and can do nothing to cut down on the handling time. As a matter of actual experience, it has been found that the handling time is increased when ratholing is resorted to. For that reason, it is probable that two crews using the rathole method will not run more than about one third more pipe than one crew. It is apparent, however, that the cost of running pipe by using two crews would be raised out of all proportion to the increase in speed. We have found that we can operate a welding machine mounted on a truck, and manned by a welder and helper, for $3.50 per hour. This cost will include the wages of the welder and helper, and the maintenance and depreciation of the truck and welding unit, and the consumption of electrodes. This charge is made regardless of whether the unit is running or whether it is in transit to and from the job, and it is possible from this charge and from the times already given for the running of various sizes of pipe to arrive at the costs of running this pipe. As has already been pointed out, these will be costs only of the work actually done from the time the first joint goes into the hole until the pipe is landed. We do not take into consideration the charges that must be made for the crew and the equipment on its way to and from the well, or while waiting at the well. These costs, however, are basic; and, while they are never attainable, they serve as a guide to what the least cost might theoretically be. After having shown these costs, it will be indicated that they are only about one half to one third the actual costs of running casing as we have experienced it. Figure 13 gives the basic costs for the running of 7-inch casing.

The costs here have been set up on the basis of 100 feet of casing, it being assumed that the casing joints will average 40 feet in length. It will be noted that in 7-inch 20-pound butt joint the cost is $2.70 per hundred feet, or 2.7 cents per foot, when the welding is done with three welders. In the case of the bell-and-spigot joint, the cost is $2.06 per hundred feet for the same weight of pipe when three welders are used. It is even more expensive to weld butt joint with two welders than it is

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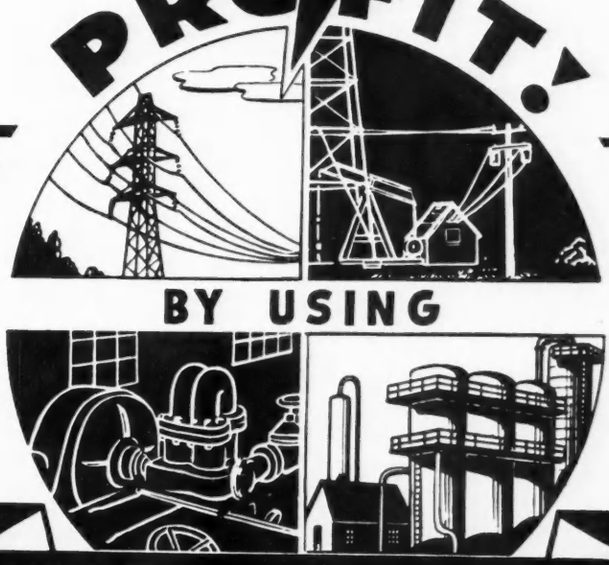

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to weld bell-and-spigot with three. It is, of course, understood that the more welders that are used, the higher the cost will be, owing to the fact that additional welders can only cut down the time necessary for welding, and can do nothing in the way of shortening the time consumed in handling the pipe. Figures 18 to 22 show various field operations.

Figure 14 presents an elaboration of data in Figure 13, showing the same values for the various sizes of pipe from 5½-inch to 13⅜-inch outside diameter. As has already been pointed out, these are very general figures, and it is desired that no one shall take too seriously these cost and rate-of-running figures. Many of these figures had to be interpolated, for while we have run all of the sizes shown here, except 5½-inch, we have not run all of the different thicknesses. It is felt that at best these figures indicate only the general magnitude of the costs at which, and speeds with which, casing may be run. Of course, in the final analysis we are probably more interested in the cost than in the speed, and some actual costs will be given which, while presenting a less attractive theoretical picture, may be of more practical help. Before doing this, however, attention is called to the following:

It might now be the tendency of those who have examined the data thus far to conclude that the bell-and-spigot joint was both more rapid in running and cheaper, owing to the fact that the welding cost was lower. That it is more rapid is true, but it is desired to point out the following which will throw more light on the actual costs. Prices in pipe are such that the butt-end pipe is usually quoted at so many percent less than threaded and coupled pipe. Then, if it is desired that the pipe be belled for welding, the usual charge for such belling is $1.00 per ton. For this reason, the bell-and-spigot pipe is slightly more expensive than the pipe bevelled for butt welding. Therefore, if the cost of the welded joint to the consumer is considered, i.e., if $1.00 per ton be added to the cost of welding the pipe, there will result the values shown in Figure 15, which is for 7-inch casing. In this case the cost of the welded joint for bell-and-spigot pipe, in spite of the fact that it is welded more rapidly and more cheaply, is greater than the cost of the butt joint. The general magnitude of this difference is about 1 cent per foot. We have not had enough data on the running of other joints to present similar figures for the slip-joint and the double-bell and chill-ring joints. However, as nearly as can be estimated, the costs would be something as follows:

The slip joint would run roughly 4 cents per foot higher than the butt joint, and would weld at the same rate as the bell-and-spigot joint. The double-bell and chill-ring joint would run about 3 cents higher per foot than the butt joint, and would weld slightly more rapidly than the butt joint. Figure 16 presents a generalization of the data found in Figure 15 for all different sizes of pipe. It is seen, then, that while we may conclude that the bell-and-spigot joint is the most rapid

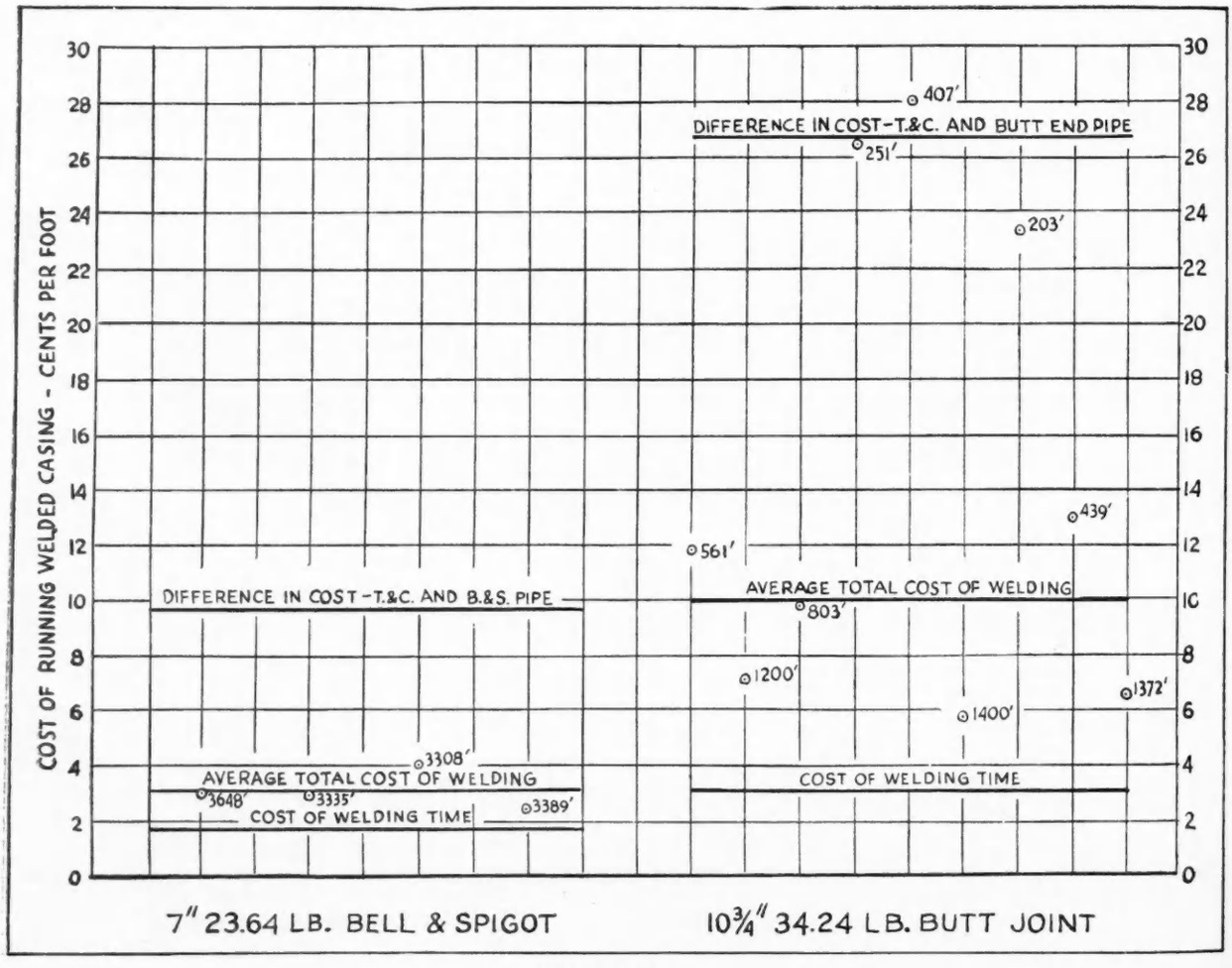


**FIGURE 17**
**Detailed Costs of Running Welded Casing**

RUNNING IN THE HOLE AT THE RATE OF A MILE IN FIVE MINUTES

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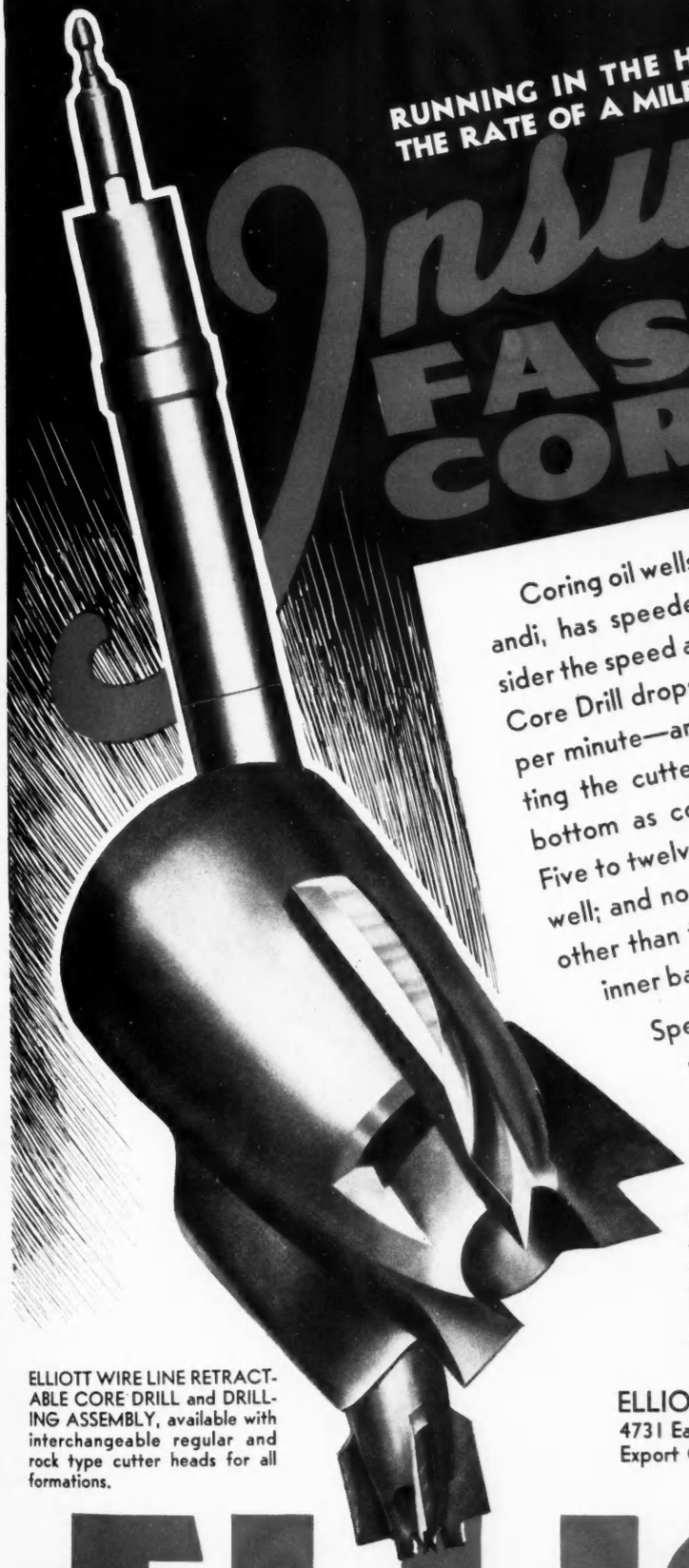

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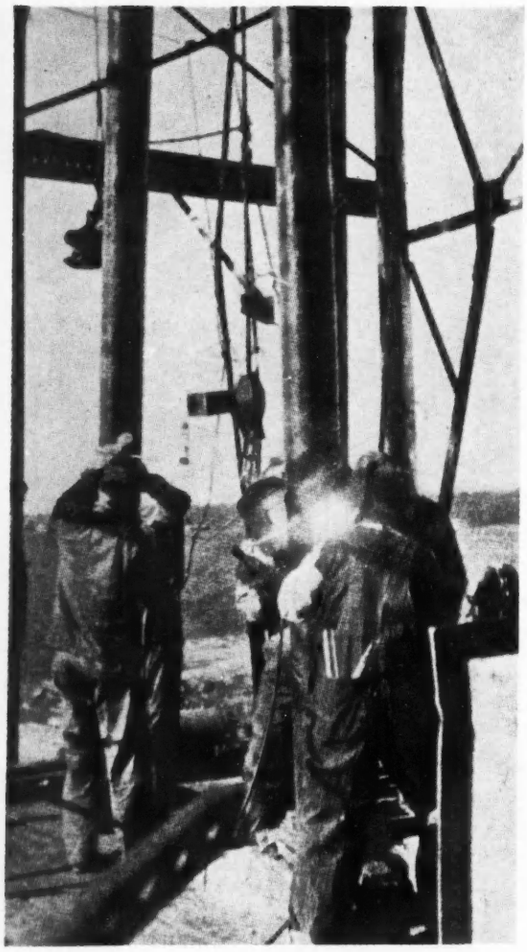

**FIGURE 19**

**In this illustration the pipe is being run by what is known as the "Rathole" method. That is, the pipe is being welded together into 80-foot doubles in the "Rathole" at the left and transferred over to the hole at the right. In this manner two welding crews work simultaneously, shortening the length of time necessary.**

joint, it is not a fair conclusion that it is the cheapest joint—the cheapest joint to weld being the butt joint.

Now, having considered these analyses as to time and cost, which necessarily for the sake of organization were based on times and costs for the actual operation of running the welded pipe only, and which did not include in any way the cost of sending the crew varying distances to the well and for waiting on the drilling crew after arriving, and for the usual delays that may occur during the running of pipe, we are ready to consider some actual costs. Figure 17 shows some actual costs taken from our books, after all charges have been made for everything pertaining to the job. On the left is shown the information for 7-inch 24-pound casing, with a wall of 0.332 inch. The lowest horizontal line shows the cost of the welding time. The various points indicated above this cost are actual costs, and the second horizontal line is the average of these actual costs. Thus, the basic cost for welding this weight of pipe is 1.8 cents per foot, whereas the actual cost of running 7-inch, as obtained from an average of these points, is 3.16 cents per foot. The right-hand side of the figure shows a similar set-up for 10¾-inch pipe, giving the fundamental cost as 3.15 cents per foot, while the actual average cost is 10.02 cents per foot. Examination of these figures allows us to point out one further factor in the variation of cost, viz., the effect the length of the string will have on the cost. In figuring actual over-all costs, it is obvious that if a welding crew is sent out to weld 200 feet of casing, they will have to add a very high percentage of cost to the actual cost due to the time they are coming and going. This is well illustrated in some of these actual costs. It will be noted, in cases where the strings are quite long, that the costs are well below the average, whereas in the cases of very short strings these costs are very high. Comparison of the cost of 10-inch with the 7-inch is also illustrative of the same thing, for the 10-inch jobs were all run on surface

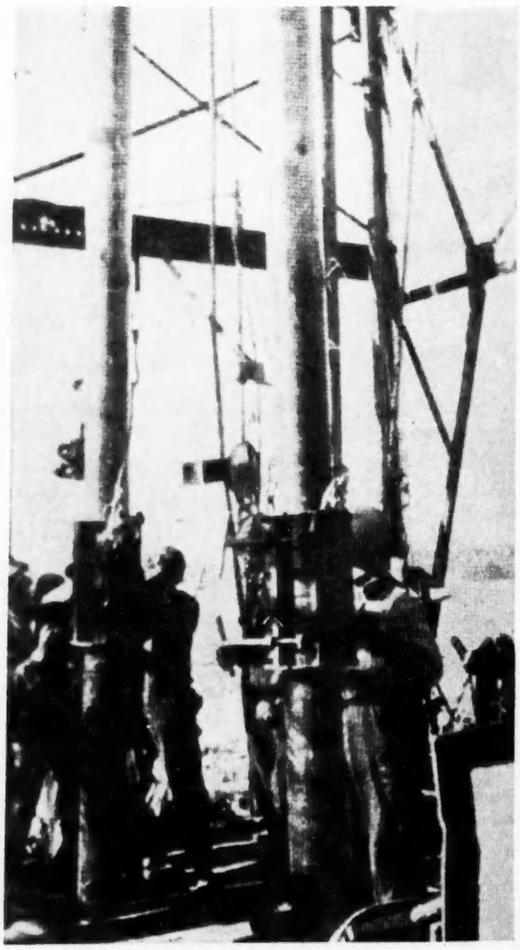

**FIGURE 18**

**Putting on the line-up clamp on a "Ratholing" job.**

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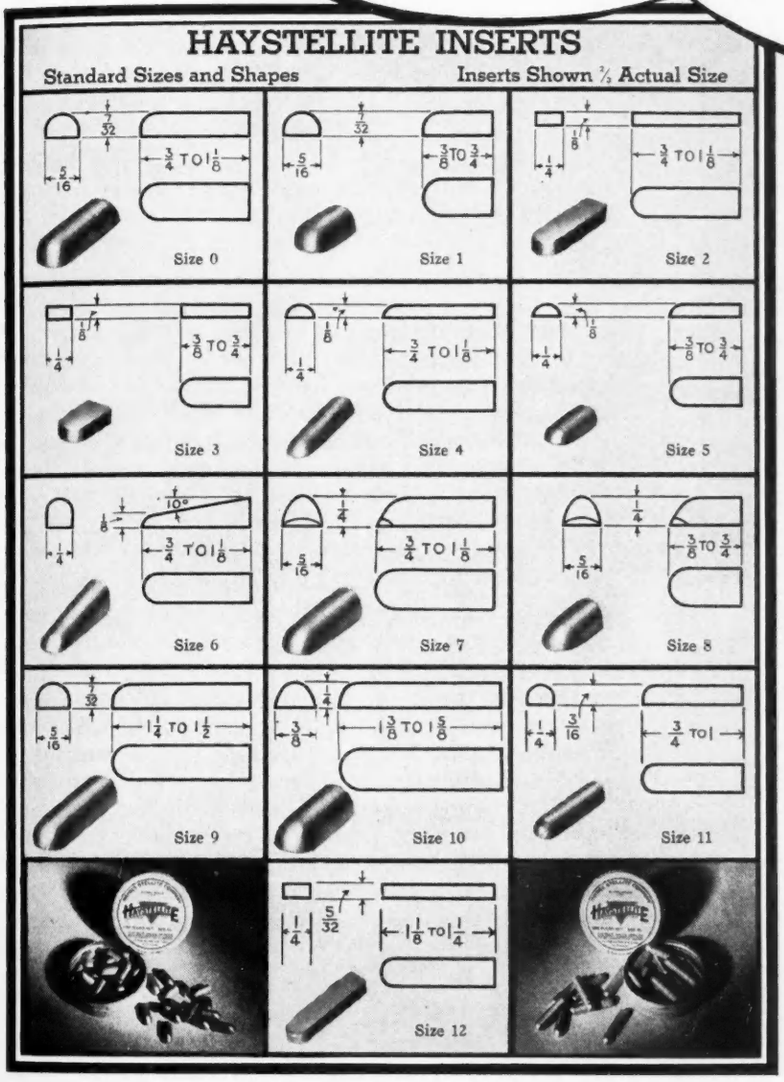


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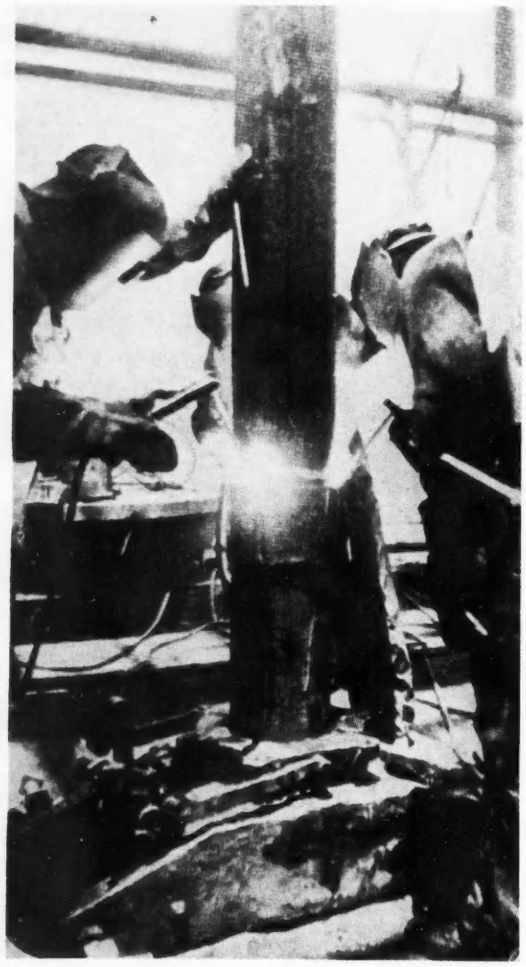


**FIGURE 20**

**Three welders welding simultaneously on 9⅝-inch slip-joint casing. Note the spider with the automatic slips. This is an additional safety factor in handling welded casing.**

strings, which did not exceed 1400 feet in length, whereas the 7-inch jobs were all run on oil strings which were not under 3000 feet in length. For that reason, the true cost of running 10¾-inch is something like three times as great as the cost of the actual welding time, whereas the true cost of running 7-inch is somewhat less than twice as great as the actual cost of the welding time. It would follow, of course, that the longer the strings, the more nearly we would be able to approach the cost of the actual welding time.

## Conclusions

The principal requirements for the successful welding of casing are: 1, casing of a steel which is readily-weldable; 2, trained personnel to do the welding; 3, certain tools that will facilitate the handling of the casing in welding.

Casing of readily-weldable steel is now on the market, and there is every indication that new steels will be brought out in the near future to meet the demand.

The trained personnel necessary to run the casing is something which probably no one has; it is necessary to train the personnel. This, however, while extremely important, is not difficult, and it can be accomplished in a very few days if we start with men who are already competent welders in other techniques.

The necessary tools for handling the casing are simple, and require only a moderate amount of ingenuity to develop. As the practice of welding casing becomes more prevalent, the task of developing these tools will undoubtedly be assumed by the tool makers, so that there will be a wide variety of tools on the market which unquestionably will be great improvements over those we are now using.

The results obtained in welding casing, as indicated by the full-joint pull tests, are very encouraging. It is apparent that joint efficiencies of 80 to 100 percent can be easily attained in quite a number of different joints, and that joint efficiencies of 90 to 100 percent can be attained just as easily, provided only that discretion is used in the selection of the joint and the technique to be used in welding.

The cost analyses of welding casing clearly show that, with the discount obtained for casing for welding as compared with the cost of threaded and coupled casing, it is possible not only to pay for the welding, but also to obtain a respectable profit.

The net result of welding casing is to make for cheaper pipe strings, with greater joint efficiencies, which probably means a greater ultimate recovery of pipe; and probably most important to the producers nowadays, who are going to great depths and encountering high formation pressures, we should be able to have pipe strings which will not leak. It seems not unreasonable to believe that this combination of benefits to be had from the welding of casing will in the near future make for its very wide practice.

## Acknowledgments

Acknowledgment is due to A. O. Smith Corporation, National Tube Company, and the Republic Steel Corporation, for the very great assistance they have rendered in making the full-joint tests, data for which have been presented in this paper.

# *Pure's Illinois Water Supply System*

By JOHN C. ALBRIGHT

A SUFFICIENT supply of water for rotary rigs is one of the drilling problems encountered in the Illinois Basin. While it may be found in shallow wells, the volume is quite small. Consequently, many concerns rely upon purchased water. Tank trucks in some instances are employed to haul water to drilling sites.

Pure Oil Company, most active operator in the territory, has taken water rights along many of the streams. The company at this time has developed three separate supplies of water; one at Cisne, another in the extreme south end of the Clay City field, and the third directly west of the discovery well in the Noble area.

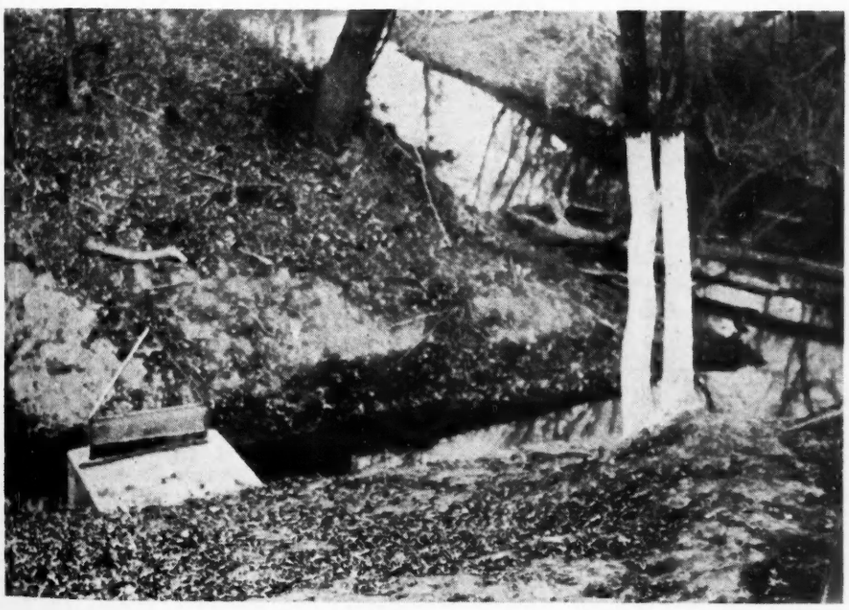
All three of the Pure Oil Company's water stations use gas engines and combination pumps to lift the water from river beds to supply tanks. From this point other pumps deliver the fluid to pipe lines that traverse through the fields where operations are being performed. Different size lines lead to the district, depending upon the activity, and from these smaller lateral systems carry water to drilling sites.

The water station located in the Clay City field handles the largest volume of river water, and has been able to supply a sufficient quantity for all drilling tests in the area. The Little Wabash River, from which the water is procured, is quite narrow at this point, running between two steep banks. The equipment used to lift the water to storage is a deep well turbine type pump that is driven through a drive shaft and gears by a small gas engine. The base for these units is a high concrete pier, hollow in the center. The pier is of sufficient height to prevent flooding at any stage.

A small branch, or draw, enters the Little Wabash at the Clay City location, and water is taken from this stream. A concrete flume has been built, which admits water through a screen to the sump in the concrete pier, and in which the deep well turbine pump operates. Water thus lifted is discharged into a nearby earthen reservoir that has a capacity of 20,000 barrels. This reservoir permits the settling of foreign matter that may be carried with the water.

The characteristics of the surface soil at this location provide clear water with very little suspended matter. The river flows through a tightly packed clay that has practically no colloidal properties, consequently the material picked up with the fluid settles rapidly.

The pipe line station, which removes the water from the reservoir, consists of two horizontal duplex piston pumps, each driven by a separate gas engine, housed in an individual building. The intake of the suction line lies directly across the reservoir from the discharge line of the river pump, and branches at the two buildings so either or both of the pipe line pumps may take suction. Both pumps may be operated simultaneously, or only one. The usual practice is to run but one of the pumping units, holding the other in reserve for standby service.



**Intake flume at Pure Oil Company's Little Wabash River water station, which supplies the Clay City, Illinois, district with water for drilling purposes.**

# CATERPILLAR DIESEL ENGINES

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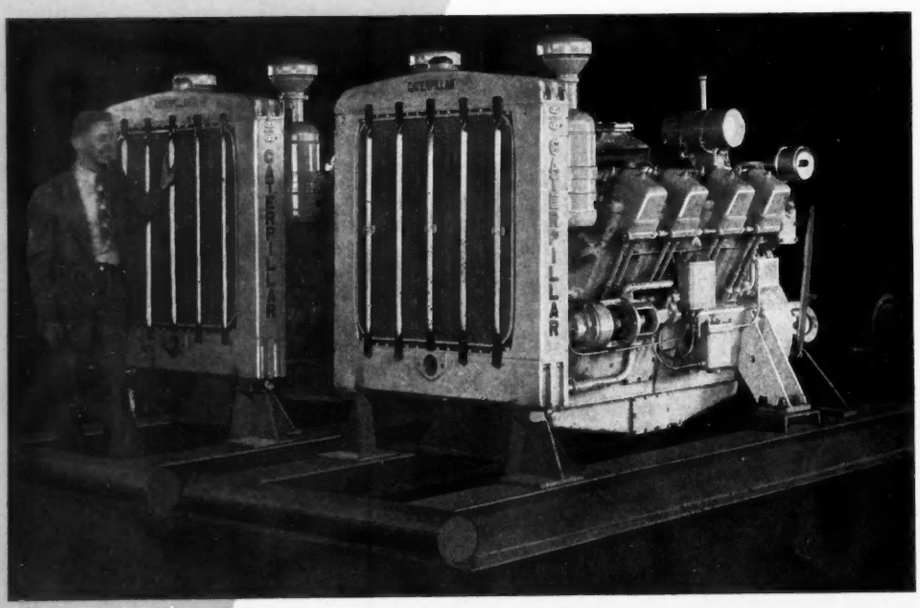


Adapting two D-17000, 160-h. p. "Caterpillar" Diesel Engines to the power requirements of a Bridgeport Mechanical Rotary Drilling Rig in the Bridgeport factory at Wichita, Kansas.

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# MEN IN THE INDUSTRY'S NEWS

**JUDGE AMOS L. BEATTY,** New York, former president of the American Petroleum Institute and of The Texas Company, was recently in Houston to make plans for an extensive stay in this city. He will supervise operations of his own company, Amos L. Beatty & Company in the Manvel field and in Ector County. Besides producing in these two areas, the company has lease holdings in numerous other Gulf Coast districts.

**S. F. SHAW,** consulting engineer of Oklahoma City, recently addressed the student chapter of the A.I.M.E. at the University of Oklahoma at the chapter's semi-monthly meeting. His subject was "Gas Lift Operations."

**ELIJAH A. PASCHAL,** Coline Oil Company, Oklahoma City, was recently elected president of the Oklahoma City Geological Society. Other officers of the society include: Don O. Howard, Oklahoma Corporation Commission, vice president, and R. B. Bruce Curry, Carter Oil Company, secretary-treasurer.

**JOHN FREDERICK CONWAY,** formerly in Argentina with Standard Oil Company of Argentina is now located at Strada Batiste 33, Bucaresti, Roumania, in charge of production of European Gas and Electric Company.

**WALTER WELLS** of Lane-Wells Company, accompanied by Mrs. Wells, has just returned from a trip to England and the Continent. He went as far east as Roumania before returning.

**H. H. HENDERSON,** San Antonio, is spending the holidays in Hot Springs, Arkansas, while his partner, W. W. Harvey, is in Missouri.

**REESE H. TAYLOR,** president of Consolidated Steel Corporation, Ltd., was named a director of Union Oil Company of California, at a meeting of the Board of Directors on Monday, December 20.

**ROBERT B. CURRAN,** Seminole scout for Carter Oil Company, will become chief scout for the company at Tulsa as of January 1. He will assist Thos. Brownfield, head of the scouting and statistical department of the company, and will fill the vacancy created by transfer of C. E. Savage to Denver, Colorado.

**E. H. BECKMAN,** with Pure Oil Company, Houston, is on vacation.

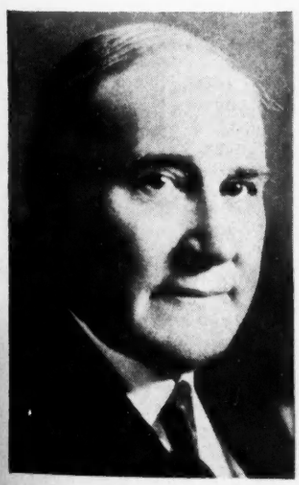
**CHARLES F. REED,** in the geophysical division of Carter Oil Company at Owensboro, Kentucky, will be transferred to Seminole, Oklahoma, as scout, to replace R. B. Curran. Reed attended Rice Institute at Houston, entered the employe of of Humble Oil & Refining Company in 1932, and in 1935 was transferred to Carter Oil Company, working with geophysics and seismograph crews.

## California Association Elects New Officers

**W. H. GEIS,** president of Super Asphalt Products Company, was elected president of the California Oil and Gas Association at the December meeting of the association board of directors. L. P. St. Clair, president of Union Oil Company of California, and R. E. Collom, vice president of Continental Oil Company, were re-elected vice presidents. H. L. Westbrook, vice president of Belridge Oil Company, was re-elected treasurer for his 13th successive term. F. E. Foster continues as managing director and D. S. Kilgour continues as assistant manager.

Directors elected for 1938 include: S. Belither, president, Shell Oil Company; Cyrus Bell, president, Perkins Cementing, Inc.; R. A. Broomfield, executive vice president, Barnsdall Oil Company; Arthur G. Brown, district sales manager, Columbia Steel Company; Mark C. Brown, vice president, Hillman-Kelly, Inc.; E. B. Gilmore, president, Gilmore Oil Company; Wm. F. Humphrey, president, Tide Water Associated Oil Company; C. S. Jones, president, Richfield Oil Corporation; Ralph B. Lloyd, president, Lloyd Corporation; Alexander B. Macbeth, president, Southern California Gas Company; A. C. Mattei, president, Honolulu Oil Corporation; C. E. Olmsted, president, The Texas Company (California); W. H. Reid, president, Hancock Oil Company of California; William Reinhardt, vice president, Union Pacific Railroad; F. C. Ripley, manager, Chanslor-Canfield Midway Oil Company; C. P. Watson, vice president, Seaboard Oil Corporation of Delaware; A. L. Weil, president, General Petroleum Corporation of California.

**W. H. GEIS**
**President**



**L. P. ST. CLAIR**
**Vice President**

**R. E. COLLOM**
**Vice President**

**F. E. FOSTER**
**Managing Director**

**D. S. KILGOUR**
**Assistant Manager**

**AL PARKER** and **NICK McCARTY**, president and vice president, are heads of both the Miss-Tex and Universal Products Companies, new active operators in South Texas. The Miss-Tex Company, affiliated with the Universal Products Company, has taken over considerable of the latter's acreage in the Premont field of Jim Wells County. The concern's first test, drilled jointly with Tom Graham, extended the pool. More activity is planned.

**A. E. GETZENDANER,** chairman of the Oil Field Nomenclature Committee, announced the name of the new field opened by Magnolia Petroleum Company's A. A. Seeligson 7, to be East Premont. The pool is located five miles east of the original Premont area, Jim Wells County.

**TOM F. HUNTER,** independent operator of Wichita Falls, Texas, was a recent Houston visitor.

**DR. C. I. ALEXANDER,** district geologist for Magnolia Petroleum Company, Lake Charles, Louisiana, presented a North-South Cross Section of the Louisiana Gulf Coast for discussion at the meeting of the South Louisiana Geological Society at Lake Charles, Louisiana, December 20.

**W. B. SHARP,** president of Mission Manufacturing Company, recently was elected a member of the board of directors of the Houston Chamber of Commerce and has been made chairman of the manufacturers' committee.

**At left: David M. Smith of Sovereign Oil Corporation takes the part of Dr. Jipps in "Oil Taxes On," Christmas play of the Wildcats of the California Oil & Gas Association, while Frank Morgan (left), Richfield Oil Corporation, plays the role of Dr. Pletion. The Wildcats' Christmas Hi-Jinks was held in Los Angeles the night of December 17 in the Biltmore Bowl. Joe Dunn was master of ceremonies and L. P. Sinclair of Union Oil Company, president of the association, made the only speech. About 1500 were there.**

**Floyd A. Calvert, above, Michigan resident attorney for The Pure Oil company, was reelected president of the Oil and Gas Association of Michigan last week. Directors likewise reelected all other officers of the association including C. L. Maguire, president Roosevelt Oil company, vice-president; George Talbot, Independent, and W. P. Clarke, Gulf Refining company, co-treasurers, and Haswell W. Grant, attorney, secretary.**

**A. L. ACKERS,** geologist for Stanolind Oil & Gas Company, was elected president of the Fort Worth Geological Society. C. Ed. Hyde, consulting geologist and operator, and H. H. Bradfield, paleontologist for The Texas Company, were named vice president and secretary-treasurer, respectively.

**GUY A. HANNUM,** landman for Transwestern Oil Company, Oklahoma City, recently announced he will retire January 1, 1938.

**A. F. MORRIS,** chief geologist for Cities Service Oil Company, Bartlesville, Oklahoma, spent several days in Wichita Falls surveying the rapidly growing K-M-A field.

**L. C. McBRIDE, JR.,** 37, oil operator, died December 21 at a Dallas hospital after a brief illness.

**H. R. McDONALD,** warehouseman for Gulf Oil Corporation at McElroy camp, has been transferred to Odessa to become West Texas district warehouseman. He succeeds J. L. Davidson, who was fatally stricken December 1.

**WARD KELLEY,** San Antonio, is spending a few days in St. Louis.

**CHARLES McDANIEL,** in the San Antonio office of Atlantic Refining Company, is taking advantage of the Christmas holidays for a vacation.

**DONALD K. DEDFORD,** Midland geologist, discussed the Internation Geological Congress, at the recent meeting of the South Texas Geological Society in San Antonio.

**DEB GOOD,** Corpus Christi scout for Plymouth Oil Company, is being transferred to Midland to work in the West Texas district.

**GEORGE R. PINKLEY,** San Antonio geologist and representative for Fohs Oil Company, spent his Christmas watching drilling operations in the Rio Grande Valley.

**C. M. HOPE** and J. H. Liles are new operators in San Antonio. They represent F. W. Fair of Tyler.

**J. N. KINCAID** has opened an office in the Gunter Building in San Antonio for Charlotte Oil Company.

**DALE BENSON,** geologist for Sinclair Prairie Oil Company, Corpus Christi, is spending his Christmas holidays with his family in Lawrence, Kansas. Ave Ricketts, scout with the same company, is vacationing in Mexico City.

**J. T. HAYWARD,** Barnsdall Oil Company, Tulsa has been elected chairman of the American Petroleum Institute's Division of Production Central Committee on Drilling and Production Practice for 1938. The 1938 vice chairman is W. E. Gilbert, Shell Oil Company, Los Angeles, and the secretary is Carl A. Young, American Petroleum Institute, Dallas, Texas.

Newly-elected 1938 chairmen of topical committees, sponsored by the Central Committee, follow:

Drilling Practice, C. E. Reistle, Jr., Humble Oil & Refining Company, Houston; Production Practice, M. L. Haider, The Carter Oil Company, Tulsa; Production Technology, H. H. Power, University of Texas, Austin, and Materials, E. F. Kindsvater, Phillips Petroleum Company, Bartlesville, Okla.

M. Albertson, Shell Petroleum Corporation, Houston, is 1938 chairman of the Special Study Committee on Well Spacing.

Members of the executive committee are: M. Albertson, M. L. Haider, E. F. Kindsvater, H. N. Marsh, General Petroleum Corporation of California, Vernon, California; G. V. D. Marx, Standard Oil Company of California, San Francisco; T. V. Moore, Humble Oil & Refining Company, Houston; H. H. Power; H. C. Pyle, Union Oil Company of California, Los Angeles; C. E. Reistle, Jr., Humble Oil & Refining Company, Houston; and B. B. Wescott, Gulf Research & Development Company, Pittsburgh, Pa.

## *Morris heads southwest API program committee*

W. S. Morris, of the East Texas Engineering Association, Kilgore, Texas, has been appointed chairman of the program committee which will develop the program for the regular spring meeting of the Southwestern District of the American Petroleum Institute's Division of Production. The meeting will be held in the Blackstone Hotel at Fort Worth, Texas, March 24 and 25, 1938.

Other members of the committee are:

J. K. Hufendick, The Texas Company, Wink, Texas; L. A. Ogden, The Pure Oil Company, Fort Worth; C. E. Reistle, Jr., Humble Oil & Refining Company., Houston, Texas; W. E. Schoeneck, The Ohio Oil Company, Shreveport, La.; H. M. Staggs, The Atlantic Refining Company, Dallas, Texas; and C. G. Staley, Lea County Proration Office, Hobbs, N. M.

# Generally Unsettled

## Continued weakness of gasoline market and excess stocks of that product has injected unsteadiness into crude prices

As the year draws near the close the oil industry's markets continue generally in an unsettled state, and the outlook remains obscure.

The weak gasoline market which has disturbed the industry for several months continues an important source of trouble, and the depressed gasoline prices still threaten to disrupt the crude oil market.

### Gasoline Prices Lower

Despite the large loss of ground in recent months gasoline prices at the refineries have continued in the downward trend.

In the past 10 days the tank car prices of gasoline at Mid-Continent refineries declined further from ⅛ to ¼ cent a gallon in various districts and on various grades.

These declines in gasoline prices were discouraging, since hope had risen early in December that the downward movement was temporarily arrested.

For about three weeks around early December the wholesale gasoline prices held steady for several weeks. But in the latter half of December the downward trend has been resumed.

### Gasoline Stocks Disturbing

This continued weakness of the gasoline market obviously reflects further anxiety regarding the excessive gasoline inventories.

The stocks of gasoline in the United States are 23.8 percent greater than at this time last year, whereas the demand for gasoline lately has been running less than ten percent higher.

Meanwhile, there is not much hope for an immediate correction of the gasoline situation. For the cold weather and heavy consumption of fuel oil is forcing the industry to turn out large quantities of gasoline along with the fuel oil that is needed. And for the next several months the only prospect is for a continuation of substantial additions to gasoline storage.

### Crude Market Less Steady

As early as November the weak gasoline market already had begun to affect the crude oil market. And by the middle of November there was much fear that a general marking down of crude postings would occur.

But largely by virtue of unusually strict control of crude oil production in November and December, a general reduction of crude oil prices has been forestalled.

However, the continued weakness of the gasoline market has given rise to additional anxiety regarding the safety of crude oil postings.

Furthermore, it now is indicated that crude oil production control will not be as effective in January as in December. And this prospect naturally places the crude oil market in additional jeopardy.

The position of the crude oil market undoubtedly was affected adversely by the action of the Texas Railroad Commission recently in deciding to discontinue the shut-downs of the East Texas field, while the commission also decided against similar closing down of all other fields in the state. Under the new proration order of the Texas Railroad Commission for January, the production of the state will be in less favorable relation to market demand than in recent weeks.

### January Outlook

In view of the allowables in Texas for January, it is indicated that crude oil production control for the United States as a whole will be somewhat less strict for that month than for recent months.

Nevertheless, the output of the wells of the country in January probably will not be much, if any, out of line with consumer demand.

For in recent months United States crude production has been held down actually below the market requirements, under the unusually strict state allowables that have prevailed.

In September, October, and November the production of crude oil was so strict, in fact, that it was possible for the industry to withdraw substantial quantities of crude from storage.

Moreover, December probably will show a further decrease of crude storage.

Nevertheless, this exceptionally drastic curtailment of production probably was needed to avoid cutting of crude prices; and the present drift away from such strict control gives rise to new fears for the safety of the established crude price postings.

### Statistics Favorable

With exception of figures on gasoline storage, the statistics of the petroleum industry remain generally satisfactory.

Recent weeks have brought moderate operations at the wells and the refineries.

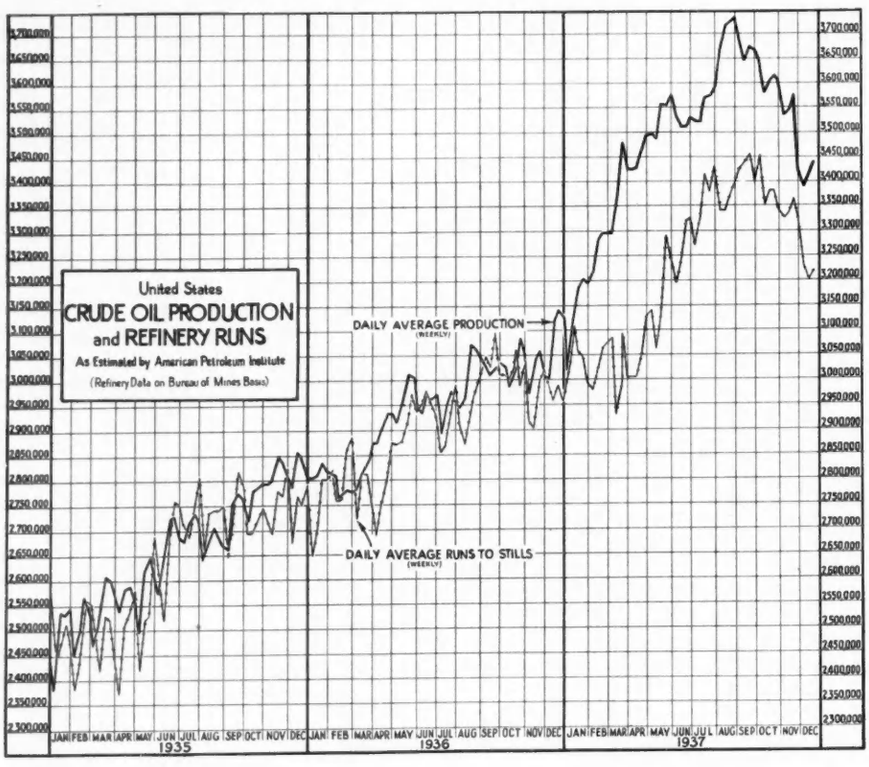
In the week ended December 18, United States crude oil production averaged 3,439,850 barrels daily, which was 25,400 barrels a day more than in the previous week and 9.4 percent more than in the corresponding week last

## Trends of United States Production and Stocks

**Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports**

| WEEK ENDED | Crude Oil Production (Barrels Daily) | Crude Runs to Stills (Barrels Daily) | Crude Oil Stocks (Barrels) | Gasoline Stocks (Barrels) | Gas & Fuel Oil Stocks (Barrels) |
|---|---|---|---|---|---|
| January 2, 1937 | 3,121,400 | 3,030,000 | 287,659,000 | 62,661,000 | 106,330,000 |
| January 30 | 3,194,050 | 2,995,000 | 285,384,000 | 69,540,000 | 102,078,000 |
| February 27 | 3,296,100 | 3,085,000 | 288,121,000 | 78,786,000 | 99,534,000 |
| March 27 | 3,431,300 | 3,060,000 | 293,587,000 | *83,538,000 | 96,591,000 |
| April 24 | 3,496,400 | 3,125,000 | 300,737,000 | 82,303,000 | 94,100,000 |
| May 29 | 3,573,000 | 3,245,000 | 306,445,000 | 78,758,000 | 96,139,000 |
| June 26 | 3,529,600 | 3,235,000 | 307,679,000 | 75,427,000 | 100,395,000 |
| July 31 | 3,591,900 | 3,425,000 | 308,250,000 | 70,872,000 | 108,209,000 |
| August 29 | *3,731,450 | 3,425,000 | 309,506,000 | 66,997,000 | 112,111,000 |
| September 25 | 3,666,300 | *3,455,000 | 307,974,000 | 65,620,000 | 116,472,000 |
| October 2 | 3,647,450 | 3,400,000 | 309,036,000 | 65,266,000 | 117,076,000 |
| October 30 | 3,602,950 | 3,345,000 | 307,140,000 | 66,836,000 | 121,070,000 |
| November 27 | 3,425,800 | 3,325,000 | 304,156,000 | 68,544,000 | 121,616,000 |
| December 4 | 3,387,000 | 3,230,000 | 303,034,000 | 70,193,000 | 121,329,000 |
| December 11 | 3,414,450 | 3,200,000 | 303,163,000 | 70,513,000 | 120,154,000 |
| December 18, 1937 | 3,439,850 | 3,220,000 | ..... | 73,288,000 | 119,919,000 |
| December 19, 1936 | 3,145,700 | 2,990,000 | ‡287,909,000 | 59,205,000 | 107,288,000 |
| Change in past year | +9.4% | +7.7% | +5.3% | +23.8% | +11.8% |

* All time peak. ‡ Stocks December 12, 1936.




year. The gain over a year ago is largely justified, however, by the fact that petroleum demand has been running this year around 10 percent higher than last year.

Crude oil runs through stills in the week ended December 18 averaged 3,220,000 barrels daily, which was 20,000 barrels a day more than in the previous week and 7.7 percent more than in the similar week last year. The refinery operations consequently were in about the same favorable relation to petroleum consumption as the crude oil production.

### Inventories Moderate

Oil inventories remain generally advantageous, with exception of gasoline stocks. Crude oil stocks were increased by the small amount of 129,000 barrels in the week ending December 11 going up to 303,163,000 barrels. Crude oil storage was reduced about 4,000,000 barrels in November, while reductions occurred also in October and September.

The crude oil stocks consequently are comparatively small at present, being only 5.3 percent larger than at this time last year, whereas the demand has been showing a larger increase than that, as pointed out above.

The fuel oil market remains strong, and prices have been trending upward in recent weeks. Fuel oil stocks, currently totaling 119,919,000 barrels, are 11.8 percent larger than those held at this time last year, but the consumption of fuel oil has been running this year about 15 percent higher than last year.

Gasoline stocks increased 2,775,000 barrels in the week ended December 18, rising to a total of 73,288,000 barrels.

### Local Crude Cut

The past week brought further evidence of the precarious situation of the crude oil markets, when Gulf Refining Company, effective December 21, met the 12-cent reduction in the crude price for the Lisbon field, North Louisiana, that had been initiated by Caddo Crude Oil Purchasing Company. The new posting is 98 cents a barrel. The Caddo company made the reduction from $1.10 to the new level December 13. It purchases about 8500 barrels daily in the field. That company explained that the reduction was necessitated by the decline in the market price of gasoline and failure to develop stronger market for the Lisbon crude.

### Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4 to 4⅜ cents a gallon; 63 to 66 octane, 4⅜ to 4¾ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; and 70 to 72 octane 5 to 5⅛ cents.

Corresponding prices in the Chicago market were as follows: 3¾ to 4¼ cents, 4 to 4½ cents, 4⅜ to 4⅝ cents, and 4⅝ to 5⅛ cents.

In East Texas the most common gasoline, 60-62, 400 end-point, was priced generally at 4⅛ to 4¼ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅜ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were:

### CRUDE OIL PRICES

**Complete tables of prices paid for crude oil at the well in principal fields is shown on page 60 in the issue of December 6. This schedule will appear only in the first issue of each month.**

## Summary of Wells Completed in the United States Week Ending December 25, 1937

| | Completions | Oil Wells | Gas Wells | Failures | Initial Production | Total, 1937 | Total this Date, 1936 |
|---|---|---|---|---|---|---|---|
| Alabama | ..... | ..... | ..... | ..... | ..... | 2 | 2 |
| Arkansas | ..... | ..... | ..... | ..... | ..... | 146 | 90 |
| California | 17 | 14 | ..... | 3 | 5,790 | 1,449 | 1,089 |
| Colorado | ..... | ..... | ..... | ..... | ..... | 19 | 19 |
| Florida | ..... | ..... | ..... | ..... | ..... | 1 | 2 |
| Illinois | 35 | 20 | 1 | 14 | 4,052 | 407 | 4 |
| Indiana | ..... | ..... | ..... | ..... | ..... | 146 | 165 |
| Kansas | 37 | 17 | 6 | 14 | 15,356 | 2,657 | 1,722 |
| Kentucky | 20 | 8 | 9 | 3 | 149 | 575 | 268 |
| Louisiana | 5 | 3 | ..... | 2 | 1,149 | 985 | 1,015 |
| Michigan | 11 | 10 | ..... | 1 | 2,666 | 928 | 769 |
| Mississippi | ..... | ..... | ..... | ..... | ..... | 15 | 8 |
| Montana | 2 | 1 | ..... | 1 | 35 | 198 | 193 |
| Nebraska | ..... | ..... | ..... | ..... | ..... | ..... | 1 |
| New Mexico | 10 | 10 | ..... | ..... | 5,874 | 675 | 564 |
| New York | 1 | ..... | 1 | ..... | ..... | 26 | ..... |
| Ohio | 31 | 11 | 7 | 13 | 378 | 1,486 | 1,923 |
| Oklahoma | 43 | 29 | 2 | 12 | 7,051 | 2,919 | 2,878 |
| Pennsylvania | 7 | 1 | 3 | 3 | 5 | ..... | ..... |
| Texas | 235 | 190 | 8 | 37 | 337,245 | 15,008 | 12,526 |
| Utah | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| West Virginia | 18 | 4 | 12 | 2 | 42 | 970 | 599 |
| Wyoming | 3 | 3 | ..... | ..... | 1,044 | 109 | 102 |
| Total this week | 475 | 321 | 49 | 105 | 380 836 | 28,937 | 23.919 |
| Total last week | 548 | 382 | 47 | 119 | 431,502 | ..... | ..... |
| Total this year | 28,937 | 20,184 | 2,511 | 6,342 | 24,077,774 | ..... | ..... |

### Comparison of Permits Granted for New Wells

| STATE | Week Ending Dec. 25 | Total this Mo. | Total this Year | Total this Date Last Year | 1936 Year Total |
|---|---|---|---|---|---|
| Arkansas | 4 | 9 | 240 | 101 | 103 |
| California | 28 | 112 | 1,584 | 1,052 | 1,054 |
| Louisiana | .. | 65 | 1,227 | 1,075 | 1,107 |
| Kansas | 22 | 129 | 2,663 | 1,846 | 1,873 |
| Michigan | 9 | 55 | 958 | 731 | 762 |
| Oklahoma | 32 | 151 | 2,711 | 2,868 | 2,594 |
| Texas | 259 | 1,235 | 17,238 | 14,896 | 15,582 |
| Total | 354 | 1,756 | 26,621 | 22,569 | 23,075 |

# Output Still Increases

**Sunday operations in the East Texas field contributes largely in boosting week's crude production to 3,482,200 barrels daily.**

RENEWAL of Sunday operations in the East Texas field brought about another sharp increase in United States crude oil production during the week ended December 25, when the daily output averaged 3,482,200 barrels, which was 47,125 barrels a day more than in the previous week, but remained 9100 barrels below the Bureau of Mines estimated demand for the month of December.

The considerably higher output in Texas, as well as smaller increases in Louisiana and New Mexico greatly outweighed declines in Kansas, Oklahoma and California.

Texas production was up 73,500 barrels at 1,397,900 daily, 43,757 barrels a day more than the state allowable, but 1900 barrels below the Bureau of Mines recommendation.

Louisiana showed a small increase of 1125 barrels, averaging 245,600 barrels daily, which was 1600 more than the Bureau of Mines estimate, but 8375 barrels a day less than the allowable prescribed by the state.

New Mexico likewise increased its production by 200 barrels, the output having been 107,700 barrels daily, which was 3600 more than the indicated demand and 100 barrels more than the state allowable.

Kansas output decreased 2675 barrels to 176,000 barrels a day, which was 10,000 barrels less than the Bureau of Mines recommendation and 700 barrels less than the state allowable.

Oklahoma showed a considerably sharp drop of 19,650 barrels daily, averaging 550,500 barrels a day, which was 38,300 less than the estimated demand, but 500 barrels a day more than the state allowable.

California likewise showed a decline of 7000 barrels daily, averaging 706,000 barrels a day. That was 26,600 barrels a day more than the Bureau of Mines estimate and 31,400 more than the recommendation of the Central Committee of California Oil Producers.

## United States Crude Oil Production

**Estimates Compiled by The OIL WEEKLY**

| DISTRICT OR STATE | Bureau of Mines Recommendation (Daily in Dec.) | State Allowable in December | BARRELS DAILY FOR WEEK ENDING December 25 | December 18 |
|---|---|---|---|---|
| TEXAS— | | | | |
| Texas Panhandle | ..... | ..... | 72,200 | 71,400 |
| North Texas | ..... | ..... | 72,800 | 72,400 |
| West Central Texas | ..... | ..... | 33,000 | 33,200 |
| West Texas | ..... | ..... | 191,700 | 191,800 |
| East Central Texas | ..... | ..... | 94,800 | 94,600 |
| East Texas Field | ..... | ..... | 489,400 | 418,700 |
| South Texas | ..... | ..... | 249,300 | 247,500 |
| Texas Gulf Coast | ..... | ..... | 194,700 | 194,800 |
| Total Texas | 1,399,800 | †1,354,143 | 1,397,900 | 1,324,400 |
| CALIFORNIA— | | | | |
| Long Beach | ..... | ..... | 58,000 | 58,000 |
| Santa Fe Springs | ..... | ..... | 41,000 | 41,000 |
| Huntington Beach | ..... | ..... | 37,500 | 38,000 |
| Dominguez | ..... | ..... | 29,000 | 30,000 |
| Inglewood | ..... | ..... | 16,000 | 16,500 |
| Ventura Avenue | ..... | ..... | 34,000 | 35,500 |
| Seal Beach | ..... | ..... | 9,500 | 9,000 |
| Midway-Sunset | ..... | ..... | 71,500 | 75,000 |
| Elwood | ..... | ..... | 7,500 | 7,800 |
| Kettleman Hills | ..... | ..... | 81,000 | 82,500 |
| Mountain View | ..... | ..... | 15,000 | 15,500 |
| Playa del Rey | ..... | ..... | 7,800 | 7,800 |
| Wilmington | ..... | ..... | 61,000 | 63,000 |
| Others | ..... | ..... | 238,200 | 233,400 |
| Total California | 679,400 | *674,600 | 707,000 | 713,000 |
| OKLAHOMA— | | | | |
| Oklahoma City | ..... | ..... | 123,925 | 138,925 |
| Seminole Area | ..... | ..... | 104,400 | 106,200 |
| Crescent | ..... | ..... | 8,100 | 8,575 |
| Lucien | ..... | ..... | 12,500 | 12,975 |
| Fitts | ..... | ..... | 78,300 | 77,225 |
| Edmond | ..... | ..... | 11,750 | 11,950 |
| Moore | ..... | ..... | 9,700 | 9,375 |
| Others | ..... | ..... | 201,825 | 204,925 |
| Total Oklahoma | 588,800 | 550,000 | 550,500 | 570,150 |
| LOUISIANA— | | | | |
| North Louisiana | ..... | ..... | 75,400 | 74,075 |
| South Louisiana | ..... | ..... | 170,200 | 170,400 |
| Total Louisiana | 244,000 | 253,975 | 245,600 | 244,475 |
| KANSAS— | | | | |
| Ritz-Canton | ..... | ..... | 5,025 | 5,225 |
| Chase | ..... | ..... | 6,850 | 5,450 |
| Hollow-Nikkel | ..... | ..... | 2,400 | 2,275 |
| Sedgwick | ..... | ..... | 3,575 | 3,575 |
| Burrton-Haven | ..... | ..... | 10,000 | 10,200 |
| Lorraine | ..... | ..... | 2,650 | 3,350 |
| Russell County | ..... | ..... | 28,250 | 31,225 |
| Silica-Isern | ..... | ..... | 15,400 | 14,650 |
| Others | ..... | ..... | 101,850 | 102,725 |
| Total Kansas | 186,000 | 176,700 | 176,000 | 178,675 |
| NEW MEXICO | 104,100 | 107,600 | 107,700 | 107,500 |
| MICHIGAN | 51,800 | ..... | 52,300 | 52,600 |
| ARKANSAS | 33,900 | ..... | 44,600 | 43,775 |
| MOUNTAIN STATES— | | | | |
| Wyoming | 57,100 | ..... | 50,400 | 49,800 |
| Montana | 15,800 | ..... | 15,300 | 15,400 |
| Colorado | 4,400 | ..... | 4,300 | 4,200 |
| Total Rocky Mountain States | 77,300 | ..... | 70,000 | 69,400 |
| EASTERN STATES— | | | | |
| Pennsylvania Grade | ..... | ..... | 74,700 | 74,600 |
| Southern Illinois (New Pools) | ..... | ..... | 22,200 | 22,100 |
| Illinois-Indiana (Old Pools) | ..... | ..... | 14,900 | 14,800 |
| Others, Eastern | ..... | ..... | 19,800 | 19,600 |
| Total Eastern States | 126,200 | ..... | 131,600 | 131,100 |
| Total United States | 3,491,300 | ..... | 3,482,200 | 3,435,075 |

† Allowable as of November 16; increased by December 1 through completion of new wells.
* Recommendation of Central Committee of California Oil Producers.

4⅛ to 4¼ cents and 4¼ to 4⅜ cents.

Fuel oil prices were mostly unchanged. In the Chicago market range oil was priced from 4⅛ to 4¼ cents a gallon. The No. 1 white oil was priced from 4⅛ to 4¼ cents, and the No. 1 straw from 3⅞ to 4 cents. No. 2 straw was 3¾ to 3⅞ cents and No. 2 dark from 3⅝ to 3¾ cents. No. 3 oil was 3½ to 3⅝ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 77½ to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 55 to 65 cents a barrel.

**RALPH WILL,** field superintendent for the Anglo-Canadian Holding & Development Company, Ltd., was bruised and shaken last week when a pipe line carrying gas under pressure exploded in the Turner Valley field, Alberta.

Edited by
WM. V. GROSS, Associate Editor

# *Soviet Union far Below U. S. in Petroleum Resources*[1]

By M. N. JURIN
Mining Engineer, Los Angeles

AT the reception for the members of the Seventeenth International Geological Congress in Moscow, I. M. Goubkin, president of the congress and the all-powerful man in the Soviet petroleum industry, declared the oil resources of the Soviet Union are the greatest in the world. Of course, there is nothing new in this assertion. It has been repeated in the Sovietland with such persistency that a reader of Soviet oil publications and other editions simply can not escape it.

Unfortunately, this claim of Russian supremacy in oil reserves finds rather poor support in the actual performance of the Soviet petroleum industry, production of which is less than one sixth that of the United States.

### 1937 Below Expectation

The increase in crude output since 1931 has been considerably below expectations of the Soviet government. The present production actually amounts to less than one half of the output planned by the Soviet administration in 1931. This fact tends to show that the Soviet oil planning was not based on a realistic estimation of their potentialities. While the last year's output was the largest in the history of the Russian oil industry, reaching 189,941,000 barrels (exclusive of Sakhalin) still it represents only an 18 percent increase from the output of 1931. This year's production in the first half of the year slightly exceeded that of the corresponding period of 1936, but in the second half of this year production has slumped considerably. It is interesting to note that during the four months (June, July, August and September) of the current year Soviet oil production was below that of the Republic of Venezuela. It seems that the Soviet hold on the second place among the oil producing countries is beginning to slip.

### Soviet Oil Reserves

The official 1934 Soviet estimate of the Russian crude resources, showing their location and subdivision, is given in the accompanying table.

According to this estimate the crude reserves of the Soviet Union total 2,402,077,000 tons, or about 16,800,000,000 barrels. According to a later estimate of Goubkin, the Soviet crude reserves on January 1, 1935, were raised to 3,200,000,000 tons, or about 22,400,000,000 barrels.

### Estimate Doubtful

This would have been a very impressive figure, provided it represented the proven resources only. But in reality, the so-called "supposed" (class $C_1$) and "geological" or "possible" (class $C_2$) of the Russian classification were also counted in, making the value of the Soviet estimate highly doubtful. If resources of such uncertain value were included in the estimate of the United States oil resources, they would have reached inconceivably huge proportions.

It can be conceded, however, that Soviet estimate of their classes $A_1$ (prepared), $A_2$ (explored) and B (visible) reserves is considerably more realistic, and such reserves approximately correspond to our proven reserves. According to Soviet estimate on January 1, 1933, the total for these three classes of

[1] Note: The information contained in this article was published in the Soviet periodicals, and also in the book by S. F. Fedoroff, V. A. Soulin and S. V. Shumilin, titled "The Oil Deposits of the Soviet Union," published in Moscow, in 1935.

| OIL REGIONS | $A_1$ | $A_2$ | B | $C_1$ | $C_2$ | Total |
|---|---|---|---|---|---|---|
| Baku | 32,654 | 48,176 | 59,827 | 212,746 | 985,000 | 1,338,403 |
| Tersk-Dagestan | 6,681 | 8,330 | 16,000 | 15,500 | 50,000 | 96,511 |
| Kouban-Tchernomorsk | 305 | 5,049 | ..... | 16,568 | 25,000 | 46,922 |
| Emba | 421 | 384 | 5,000 | 9,126 | 450,000 | 464,931 |
| Tourkmen | ..... | 1,000 | 4,000 | 5,000 | 100,000 | 110,000 |
| Sakhalin-Kamtchatka | ..... | 3,319 | 48,120 | 18,175 | 80,000 | 149,614 |
| Trans-Caucasia | 1,540 | 2,560 | ..... | 20,565 | 85,000 | 109,665 |
| Middle Asia | 166 | 254 | 49 | 562 | 5,000 | 6,032 |
| Western Ural | ..... | 25,000 | ..... | 50,000 | ? | ? |
| | 41,767 | 94,072 | 132,996 | 353,242 | 1,780,000 | 2,402,077 |

$A_1$—prepared reserves; $A_2$—explored reserves; B—visible reserves; $C_1$—supposed reserves; $C_2$—geological or possible reserves.

**Note:** The table is given in the book, "Oil Reserves of the Soviet Union". The columnar totals are rendered by the author of this paper, because these totals, as they are given in the book, are not correct. However, this does not affect substantially a discussed subject.

reserves ($A_1$, $A_2$, and B) equals approximately 269,000,000 tons (1,883,000,000 barrels) and the corresponding amount for the reserves on January 1, 1935, will be 3,584,000,000 barrels. The United States proven reserves during the last three years were placed around 12,000,000,000 barrels. This puts the Soviet Union decidedly below the United States.

### Russian Oil Fields

In order to present a more comprehensive picture of the Soviet petroleum industry, a brief review of the more important oil fields on the Russian territory will be given here.

I will start with the Baku group of oil fields, whose importance far outweighs all the other Soviet fields. These fields have been in the production stage for more than a century. As early as 1821 the Russian Imperial government imposed taxes on the oil producers in the Baku region, thus recognizing their economical importance. In 1901 the Baku oil fields had already reached an annual output of 80,000,000 barrels—although the entire production was obtained by the bailing method and by gushers. The present output of Baku exceeds that of 1901 only by 35 percent.

Following are the different oil fields of the Baku group:

**Balahany-Sabounchi-Ramany Group,** now renamed Lenin field, is the oldest producing territory of Baku region. Total amount of crude obtained from this territory exceeds 1,500,000,000 barrels. However, in 1932 the production curve turned down, due to progressing depletion of the crude reservoirs, and, at present, the Lenin fields produce about 20 percent of the total Baku output.

**Bibi-Eibat Fields** (renamed Stalin) situated on the Bibi Eibat Bay of the Caspian Sea. The exploitation of this territory began more than a century ago, the total yield reaching about 500,000,000 barrels. Current production amounts to about 25 percent of total Baku output. It is possible that the output of the Stalin field will be increased due to the progress of reclamation of the Bibi Eibat Bay for oil production.

**Sourahany Field.** (Ordjokonidse) was discovered in 1903. In 1928 it exceeded the oil output of the other Baku fields and at present continues to hold the first place in that area, its production amounting to 35 percent of total Baku district. Recently the lower "Kirmak" sands of the Baku productive series have been reached at a depth of approximately 6000 feet, and there are good indications that this horizon will give a substantial output.

**Kara-Tchuhur** (Kaganovitch) field was discovered in 1928. Exploration drilling revealed that sands on the western side of the anticline are oil saturated, while those of the eastern side, due to extensive faulting, are flooded with water. Oil sands are found at a depth of 2600-3000 feet. In 1933 this field yielded about 8,000,000 barrels of crude and the production has been steadily increasing since.

**Kala** (Asisbekof) field is the newest of Baku oil fields. Production on a large scale was started in 1932, although the presence of oil was proven by a number of wells drilled by Nobel in 1904 to a depth of about 1300 feet. A rich oil sand was discovered at 2500 feet by a well drilled by the Azneft Trust in 1932. Other wells drilled to a depth of about 7000 feet established a series of deeper sands, lowermost of which belong to so-called Upper Kirmak zone. The potentialities of Assisbekof fields are considered to be the best of all the Baku fields. Its 1933 output had risen to 7.4 percent of the total Baku district. Since then it has shown a steady increase. However, the actual production for 1937 is running below the planned output by about 20 percent.

**Puta** (Molotoff) field was discovered in 1925. The production is obtained now from a depth of about 3200 feet. The prospects for large production from this field seem to be rather negative. Its production has shown a very slow rate of increase so far.

**Lok-Batan** (Mikoyan) field was discovered in 1933. Flowing wells in this territory usually are of short life, and this fact, together with the small area of the field, which totals about 250 acres, does not indicate a major development.

**Binagady** (Kiroff) field. Development of this field dates back to 1903. Production is obtained from the deepest sands of the Baku "productive series" (Kirmak and lower Kirmak zones). The field is considerably depleted and prospects for an increase in output are not encouraging.

Besides the oil fields already described, there are in the Baku district a number of pools recently uncovered, the potentialities of which are not sufficiently revealed, or about which information is lacking. Among those fields, the Pirsagat, Aliaty, Kerges and Zych should be mentioned.

### Other Caucasian Fields

**Grozny** oil fields are located on the northern slope of the Caucasus Mountains. Production on a commercial scale began in 1893. In 1931 the output reached its peak, totaling for that year 56,000,000 barrels (about 35 percent of the total Russian output then). Since 1931 the production has fallen to one half of the peak output, but Grozny still holds second place among Russian districts, the present production amounting to about 12-15 percent of the total.

There are two separate fields belonging to Grozny group: the old Grozny, which was discovered first and new Grozny, which began commercial production in 1913. The old Grozny oil field is depleted to a large extent, and the main part of crude output for Grozny district is supplied by the new fields. The prospect for increasing production from these fields does not seem to be encouraging.

**Kouban - Tchernomorsk** (Maikop) fields are also located on the northern slope of Caucasus range, but to the west of Grozny and nearer to Black Sea. The Maikop area was discovered in 1891. The present daily average output of about 25,000 barrels constitutes approximately 4 percent of the Russian total. Potentialities of this region are somewhat better than those of Grozny.

The Baku, Grozny and Kouban (Maikop) belong to Caucasian group of oil fields. Production is obtained from the oil-bearing sands of the Tertiary (Pliocene) formations. Other Russian oil fields located north from Caucasus and nearer to central part of Russia, obtain their production from older formations, such as Cretaceous, Jurassic, Perm, Perm-Carbon and even Devonian (Uchta). The following four fields belong to this northern group: Emba, Bashkiria, Tchousovaia and Uchta.

**Emba oil fields.** Production on a large scale started in 1911. In 1930 the annual output reached its peak (about 3,000,000 barrels), and since then the production has declined. Nevertheless, it would be too rash to conclude that an increase of output from these fields is improbable. There are many possibilities in this large region. In addition to previously discovered Dossor and Makat fields, a number of new pools like Iskine, Koschagyl, Sagis and others, have been put on production. However, the fact that the Soviet plan of production for this territory is being fulfilled to the extent of only 50-60 percent does not justify an excessive optimism.

**Bashkiria oil fields** (Also called Sterlitamak or Ishimbaevo) entered the production stage in 1932, although unsuccessful attempts to obtain production were made as far back as 1901. The producing horizons are represented by the limestone with brahiopoda-bryozoa fauna of the perm-carbon formation, reached usually at a depth from 1600 to 3000 feet. The producing area equals approximately 2000 acres. In the current year the daily output averaged from 15,000 to 18,000 barrels.

**Tchousovaia oil fields** were discovered in 1929 by a well drilled for the exploration of the potassium deposits. The production horizon is the same brachiopoda-limestone found in Bashkiria. The small area (so far only 50 acres are oil producing) and low output of the wells, not exceeding 70 barrels a day, does not indicate the development of this area into a major producer.

**Uchta** is the most northern oil field

in Russia and also is one of the oldest in the world, as crude was produced here as far back as the seventeenth century. The producing horizons (Devonian sandstones) are reached at depths ranging from 100 to 2000 feet. The output of the wells does not exceed 20 barrels and usually is lower than that. However, a considerable area of this field compensates to a certain extent for the low productivity of the wells. The daily average output of the Uchta is around 3000 barrels.

It is reported that continuous exploration activity near Syzran, on the Volga river, has been crowned with success by three wells obtaining production in a substantial amount. However, details are lacking.

Among other oil fields, the Tourcoman (Middle Asia) and Sakhalin oil fields are beginning to attain importance. The Tourcoman fields, on the Asiatic side of the Caspian Sea, since the discovery of the Nefte Dag, have increased their output to about 7000 barrels a day. The Sakhalin fields also have shown a steady increase in production, which today averages about 8000-10,000 barrels a day. The greatest drawback of the Sakhalin is, of course, its close proximity to Japan, who is in possession of the southern part of the island. In case of war, it will be extremely difficult for the Russians to defend the northern part of the island.

### Central Fields of Minor Importance

The Soviet government for a long time has been endeavoring to develop oil resources nearer to central Russia. Such resources would be more advantageous for economical reasons, and especially from the point of view of national defense, than the bordering Caucasin group. So far, results of the extensive search for a more centrally located oil territory cannot be considered entirely successful, because the combined production of these "central" fields (Uchta, Emba, Bashkiria and Tchousovaia) amounts to less than five percent of the total Russian production. Besides, it does not look like any of these fields will develop into major producers like Grozny, and certainly their combined production will not even remotely approach the prolific Baku district.

The reasons for such an appraisal of the northern oil territory are these: (1) None of the oil fields in the northern group showed a rate of increase in output which could be compared favorably with those of Grozny or Baku district, (2) The output of individual wells in all northern fields is low, such as 5 to 70 barrels a day; Emba field has been in commercial production for 26 years and shows signs of depletion, (3) All these fields are considerably in arrears on their planned quotas, which might show that their potentialities are considerably over-estimated by the Soviet oil administration.

# *Plan 40 New Tests*

## Producers in Turner Valley to be tripled before mid-year; wildcat drilling to increase also

At least 40 new tests will be undertaken in the Turner Valley field of Alberta, Canada, between January 1 and conclusion of the 1938 spring drive, a year-end survey of tests preparing to spud and negotiations under way revealed last week. Derricks are up, cellars dug, or locations made for 14 of the new wells, many of which plan to spud early in the new year. Four Turner Valley wells are in the Madison limestone, pushing for completion before January 1, while another 24 are at various stages above the limestone.

Completion of drilling tests and many of those scheduled for early drilling will more than triple the number of Turner Valley producers before the first half of the new year is spent. While a few of the drilling and projected tests are a short distance outside of the proven area of the field, few if any could even be classed as semi-wildcats and all are expected to complete as producers.

### Wildcats to Increase Also

For Alberta wildcat structures, where 28 tests were drilling or temporarily idle because of severe weather conditions as the week closed, a corresponding increase in activity is predicted. Several of the active wildcat tests have recently reported encouraging shows and are expected to complete shortly as commercial producers. Additional tests have been announced for a few of the structures.

Turner Valley's oil "boom" got under way this past spring and has resulted in 27 wells producing crude. The field was discovered in 1914 by W. S. Herron, who is still active in Alberta oil development, and the late A. W. Dingman. The World War brought a halt to development and it was not until 1924 that Royalite Oil Company, Ltd.'s No. 4 blew in with a naphtha flow of 20,000,000 cubic feet daily to revive interest for a few years. The depression years brought a second prolonged halt in the field's growth until Turner Valley Royalties, Ltd.'s test on Legal Subdivision 13, Section 28, Township 18, 2-w5, blew in on June 17, 1936, as the Valley's first crude producer. The initial was 1500 barrels daily and present production is in excess of 600 barrels daily.

### Acid of Great Help

Between completion of Turner Valley Royalties a year ago last summer and May of this year, less than a half-dozen new tests were completed. The past eight months, however, has seen completion of more than a score of crude producers. Of importance equal to development progress of the past year was perfection during the past summer of an acid treatment that has since had remarkably successful results on producing wells, besides converting several wells previously completed as naphtha producers to crude producers. Before this past summer, attempts to increase production through use of acid were of little success because of the peculiar nature of the

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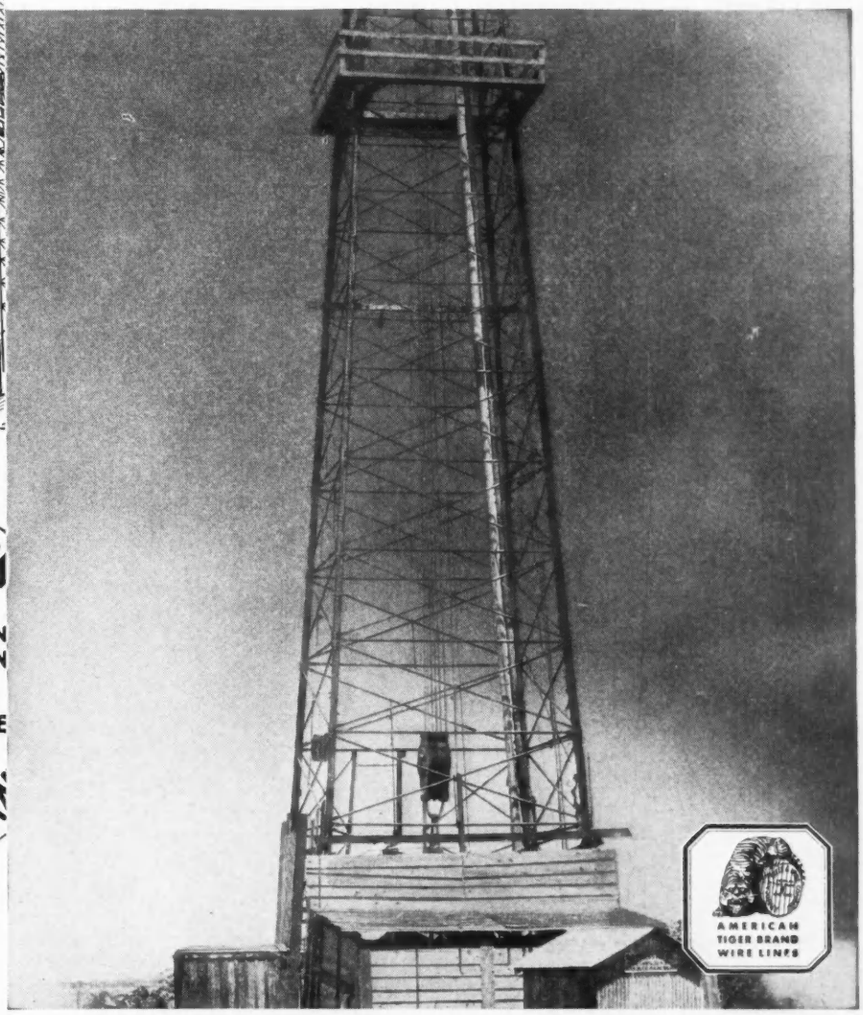


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producing formation. During the past few months, however, production increases of 200 percent after acidization have not been unusual.

Now ranking third among the oil producing areas in the British Empire, Turner Valley operators predict the coming year will bring Alberta into even greater importance in Great Britian's petroleum picture. Daily production is in excess of 25,000 barrels now.

**Using Planes**

For the first time in Canadian oil history an airplane was used last week to establish communication between an oil well and company headquarters. The plane carried formation samples from Columbia Oils, Limited's wildcat in the wilderness of the Flathead Valley, southern British Columbia, to officials of the company in Calgary. The trip, which would have taken four days with auto and train, was made in an hour and 40 minutes. Formerly samples and drilling reports from the well had to travel south to Kalispell, Montana, and then by train to Calgary. The well is 75 miles from a telephone. A special landing field has been constructed at the well site, 6 miles north of the international boundary. Robert Wilkinson, managing director of the company said that airplane communication will be maintained as the well, now drilling at 6800 feet, is at "a very interesting stage" and daily reports are needed.

Neil McQueen, formerly geologist with Imperial Oil Company, Limited, and Austin C. Taylor, president of Bralorne Mines, head a Vancouver Syndicate that last week took over from York Oils, Limited, financing of drilling 160 acres in Section 20, Township 18, Range 2, South Turner Valley acreage straddling the Highwood River. A $700,000 drilling program, involving four wells is planned for the acreage, the first well to be started immediately.

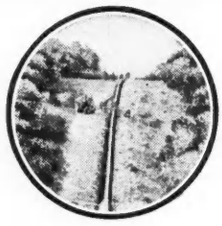
## *Planning railroad outlets for Vera Cruz oil belt*

Additional transportation facilities and outlets for a wide section of the Vera Cruz state oil belt of Mexico are promised with arrangements the federal government and a group of railroad men are making to build a railway between Villa Cardell and Tuxpan, an important Mexican Gulf port. The railroad would run through such petroleum centers as Papantla, Nautla and Misantla. Negotiations are being conducted with a Mexico City bank to finance the proposition.

## *Japan getting most of oil exports from California*

Total tanker shipments of crude oil and other petroleum products from California ports in October was 5,762,753 barrels, and of this total, 4,219,783 barrels went to Pacific foreign ports. Most all of Pacific foreign tanker shipments go to Japan. Also during October, package shipments amounted to 498,262 barrels, and of this 194,220 barrels went to Pacific foreign ports. These figures were released by the San Francisco office of the Bureau of Mines.

# PIPE LINE NEWS



## *Protest natural gas for Milwaukee*

Forces opposed to bringing natural gas to Milwaukee and other Wisconsin cities, a proposal now being studied by the Wisconsin League of Municipalities, are organizing for an active campaign against the project.

Last week representatives of 13 A. F. of L. and C. I. O. unions appeared before Mayor Daniel W. Hoan of Milwaukee to protest his announcement of several weeks ago indicating he favored the natural gas proposal. After hearing the delegation, the mayor said he still had an open mind and would not champion a cause that would deprive men of employment.

"I intend to study this question thoroughly before making any decision." Mayor Hoan said. "The League of Municipalities is making a study to determine whether Wisconsin cities could get connections with natural gas lines near Chicago and also to discover whether such service would be cheaper for the consumers of the state."

Walter Hohler, business agent for the Coke and Gas Workers' Union and one of the delegation's spokesmen, told the mayor that natural gas was not as satisfactory as manufactured gas because its heating efficiency was not steady and its introduction would require domestic users to spend millions of dollars for new equipment. "Natural gas would soon be taxed the same as gasoline now is and the result would be higher rates to consumers," he argued. "Further, it would wipe out an industry that has a $12,000,000 plant and an annual pay roll of $1,500,000. Closing the plant would reduce employment in allied lines such as shipping, trucking, machine shops, foundries and numerous other industries making gas supplies."

A delegation of coal dealers also protested the proposal at a hearing granted by the mayor, maintaining introduction of natural gas in Milwaukee would jeopardize the livelihood of many local dealers and their employes.

## *Start surveying Lisbon oil line*

**Shreveport.**—Work of surveying the proposed 28-mile six-inch line for Clyde Barbour and Gil Woods of Houston, Texas, from the Lisbon field, Claiborne and Lincoln parishes to the Louisiana and Arkansas railroad at Gilark, just north of Minden, Webster Parish, will start next week. They are reported to have signed contracts for approximately sixty connections in the field for a three-year period. They plan to pay the regular gravity scale, now $1.10 for Lisbon crude.

Barbour and Woods will also construct a gathering system at Lisbon, pipe the crude to Gilark, and thence ship it by rail to the Gulf of Mexico.

When Caddo Pipeline Corporation (Grogan) cut the gravity scale price at Lisbon 12 cents to 98 cents this company had connections for 6700 barrels of 10,000 barrels daily allowable there but later it acquired another section of Gulf's gathering system, known as Lateral Number two, which it leased for a four months period and this gives Grogan connections to 8500 barrels of the field's 10,000 barrels daily. Gulf did not immediately meet Grogan's reduction on the price of Lisbon crude but did so during the last week. The Gulf recently began taking the full allowable from its connections amounting to 1500 barrels daily, where previously it had been taking only 57 percent. It is reported that both Gulf and Grogan will take all back allowables in the field since December 1.

It is reported that Grogan, who is purchasing the distillate production at Cotton Valley, Webster Parish, Louisiana from Ohio Oil Company, plans to move some of this distillate to one of his Hurricane company plants in East Texas where it will be blended with 150,000 barrels of Lisbon crude that is being transported to East Texas for Grogan by Atlas Pipeline Corporation, controlling stock on which was recently acquired by Lion Oil Refining Company. Atlas will pump both ways in its line, pumping south during two six-day periods each month and north the rest of the time.

## *British Colombia to regulate oil*

British Colombia, with little oil production but with an important wildcat test drilling on the Sage Creek structure, has established a one-man board for regulation of the petroleum industry. An administration measure which also applies to the coal industry, it was passed by the legislative session just adjourned. The new law requires persons engaged in the industries to obtain licenses from the board, gives the board authority to fix prices at which petroleum and its products may be sold within the province, establishes standards to be applied to petroleum products and sets license fees and gives the board authority to suspend or revoke licenses.

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**Tulsa.**—Guest speaker at a meeting of the Tulsa Geological Society, held December 20, was Dr. D. W. Ohern, consulting geologist of Oklahoma City, who spoke on "Geology of Some Canyons of the West—Grand Canyon, Zion and Bryce." The talk was illustrated with lantern slides.

# *Intensive Powder River Basin Leasing Assures Much Work*

WITH several of Wyoming's principal light oil fields located around its rim, the Powder River Basin, comprising roughly the northeastern quarter of the state, has during the past 18 months been the area of Wyoming's most intensive leasing.

An even one dozen blocks of size and compactness to warrant drilling have been built up by four major companies and eight independent groups in leasing of approximately 750,000 acres. All save two of the blocks move in basinward and require considerable geophysical study preparatory to drilling. The Powder River leasing play follows along with trends taking place in other older oil producing areas, in which prospecting moves in from pools located along the rims of geo-basins toward possible subsurface structures blanketed with Tertiary beds and depending largely on seismograph surveying for location.

The Powder River basin comprises part of Natrona, Converse, and Niobrara on the south and east, Weston and Crook counties on the northeast, all Campbell and Johnson counties and part of Sheridan County. This huge drainage basin forms the source beds for Wyoming's largest light oil field, the Salt Creek field in Natrona County on the western rim of the basin, Big Muddy on the southern rim, Lance Creek, the Mule Creek fields, and Osage on the west, and Billy Creek on the north.

### Play Two Years Old

Leasing play in the Powder River Basin started nearly two years ago, quietly following the completion of a 1500-barrel well in the Sundance formation by Ohio Oil Company in the Lance Creek field. It gained continued impetus as development of deeper production continued in the Lance Creek field where to date since March, 1935, 45 deep producing wells have been completed.

Added incentives to the Powder River play have been the opening of Stanolind Pipe Line Company's line from Clayton station, Wyoming, to Freeman, Missouri, and the tying in of Lance Creek to that line, the discovery of light oil at a shallow depth at Shawnee, discovery of deep Minnelusa production at Lance Creek, and the trends in other areas to lease large blocks toward the centers of basins which heretofore had seen only development along the rims.

### A Geophysical Play

With the exception of the rim of the Powder River Basin, where Cretaceous rocks are exposed, the area is blanketed by a thick mantle of Tertiary beds, mainly Fort Union. Structures within the basin are covered and the area is largely a seismograph play, but this has not particularly precluded independents. In several instances the small lease men have assembled blocks along regional uplifts and trends from known anticlines near the rim of the basin and these have been turned to major operators for geophysical surveys and possible drilling.

Of the dozen blocks assembled, eight have been seismographed or are being seismographed, three are being tested for deep production, and three are definitely scheduled for tests. Of the contemplated tests that in the Pumkin Buttes area will probably be the most important. Starting in Tertiary beds and located deep within the basin, the test will give the first accurate measurement of beds within the basin and will form a means for absolute measurement of geosound reflections to give a constant for more accurately determining depths by reflections in other parts of the basin.

While 750,000 acres forms a large leasing play in any man's oil country, the acreage leased forms a little less than one-twentieth of the possible acreage that may be assembled in Powder River drainage basin blanketed by Tertiary beds. In view of Wyoming's largest fields developed around its rim, Powder River basin forms beyond a doubt Wyoming's most likely area for a continued strong leasing play.

### 30,000-Acre Block

Straddling the line between Natrona and Converse counties, and midway between the Salt Creek and Big Muddy fields, is the Cole Creek block. (No. 1 on the accompanying diagram.) This block embracing nearly 30,000 acres is held by General Petroleum Corporation of California, which is spudding a water well for Government 1, NW NW SE 21-35n-77w, which is rigging up rotary. The test will start in the upper Cretaceous and has as its principal objective the Wall Creek sands, but is rigged to drill to 8000 feet for a deep test if production is not developed in upper sands. The Salt Creek field has produced 250,000,000 barrels of light oil to date in 17 years from the Wall Creeks (Frontier), while the Big Muddy field has produced 24,000,000 barrels. Location for the test was made on the strength of seismic findings.

Southeast of Douglas and abutting to the Shawnee Creek area, Elbe Land & Development Company of California has acquired a block of 8000 acres and plans the drilling of a deep rotary test. Surface formation is the White River formation brought in by glacial drift. It lies unconformably upon beds of lower Tertiary (Fort Union) or perhaps upper Cretaceous (Lance or Fox Hills). The block covers the Irvine structure (No. 2).

Eighteen miles east of Douglas in Converse County is the Shawnee light oil field. In June of this year Wyoming-Southern Oil Company, which holds a block of 22,000 acres, drilled into 25 barrels daily of light oil production at 560 feet. Oil is coming from a sand believed to be at the contact of the White River with the Fox Hills. The Wyoming-Southern block blankets the southern portion of the area and forms the only solid blocking on West Shawnee. Protection acreage is held in the area by Carter Oil Company, Ohio Oil Company, Chadron-Osage Oil Company, A. M. Teakell and associates, and several other smaller groups. Chadron-Osage is drilling a deep test, State 1, SW SW SW 16-32n-69w, which is below 3900 feet and reported to be drilling in the Niobrara formation. (No. 3.)

### 60,000-Acre Block

To the north of the Shawnee area and continuing nearly to the Lance Creek field is a block of nearly 60,000 acres assembled by Thomas H. Carney of Oakland, California, and Casper, Wyoming. The acreage includes patented, state and federal lands, and negotiations are under way for a deep rotary test of the block on the Beaver ranch. (No. 4.)

Situated nearly midway between Shawnee and Lance Creek is a block of acreage assembled by A. M. Becklinger of Casper on the Harney Creek-High. This block totals nearly 30,000 acres of land and is being leased to a major company for seismograph study and possible drilling of a deep test. (No. 5.)

Two sizeable blocks, one of which is being drilled, cover acreage on an east and northeast trend from the Lance Creek field, Niobrara County. Continental Oil Company has unitized nearly 12,000 acres of land covering the east end of the Lance Creek field. This area was seismographed by the company a year ago. Continental is drilling below 3000 feet in Leach 1, SW NE NE 29-36n-64w, which is regarded as one of Wyoming's most significant tests. If productive in either the Sundance formation or the Minnelusa, the Continental well will more than double the area of Lance Creek. (No. 6.)

Just to the east and north of the Continental block is 8000 acres held by Lawrence Johnson and John M. Barnes of Lusk, Wyoming, and B. J. Erwin of Cheyenne. This acreage covers a northeast trend of the Lance Creek anticline and is being studied by geophysical methods preparatory to a deep test. (No. 7.)

Unitized by Continental Oil Company and scheduled for a deep test is a block of 10,000 acres covering the Ant Hills structure to the northeast of Lance Creek. (No. 8.)

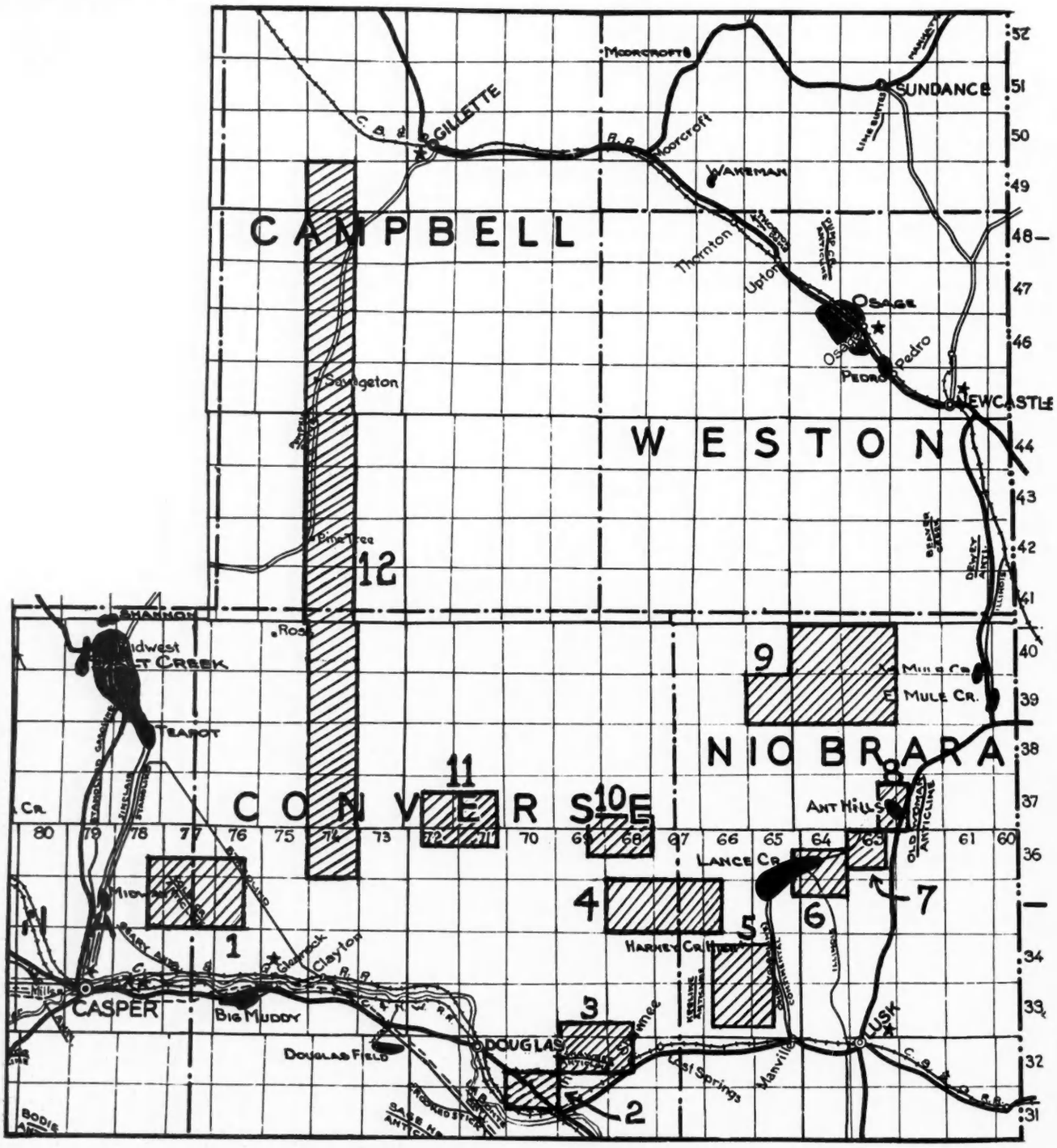
### 93,000-Acre Block

Second largest leasing block in the Powder River Basin is that assembled by Fred Goodstien of Casper. Comprising 93,000 acres, the Goodstien block, 6 miles north of Lance Creek, blankets all lands in Township 39 North, Ranges 63, 64, 65 West, and Township 40 North, Ranges 63 and 64 West. Seismograph crew is shooting the area, and negotiations are under way for a test to the Sundance. (No. 9.)

Deeper within the basin are two large blocks along the Box Creek uplift. On East Box Creek, Lester Esterline of Casper has leased 14,000 acres of patented and federal lands and is negotiating for a seismograph study of the area preparatory to a deep well. (No. 10.) On West Box Creek, cov-

ering a well defined surface structure, Roy Thacher and associates of Casper have leased 16,000 acres. (No. 11.)

Forming the largest block in Wyoming oil history is the huge piece of acreage leased by Carter Oil Company and Phillips Petroleum Company. Starting at Township 36 North in Converse County, the leases embrace 14 townships north to 49 in Campbell County through Range 74 West. Companies are making an intensive seismographic survey of the block, and a test will probably be started within the next year on federal permit lands covering the Pumpkin Butte area in Township 44 North, Range 74 West. (No. 12.)




**DRILLING BLOCKS IN POWDER RIVER BASIN**

**Approximately 750,000 acres of prospective oil lands have been assembled into 12 large drilling blocks in the center of Powder River Basin, around whose rim is located Wyoming's largest light oil fields. The blocks are: No. 1, Cole Creek, General Petroleum Corporation; No. 2, Irvine Structure, Elbe Oil & Development Company; No. 3, West Shawnee area, Wyoming-Southern Oil Company, Chadron-Osage Oil Company, Carter Oil Company, Ohio Oil Company and others; No. 4, Beaver Dome, Thomas H. Carney; No. 5, Horney Creek, A. M. Becklinger; No. 6, East Lance Creek, Continental Oil Company; No. 7, Northeast Lance Creek, B. J. Erwin, Lawrence Johnson and John B. Barnes; No. 8, Ant Hills structure, Continental Oil Company; No. 9, North Lance Creek, Fred Goodstein; No. 10, East Box Creek, Lester Esterline; No. 11, West Box Creek, Roy Thacher; and No. 12, Pumpkin Buttes, Carter Oil Company and Phillips Petroleum Company.**

# *Oklahoma City Has 200 Wells to Put on the Pump*

By GRADY TRIPLETT, Staff Writer

NORTH end of the Oklahoma City pool is now ready for the pump. The "Mansion area" around the state capitol has but five wells drilling and a recent federal court decision indicates that the exclusive Lincoln Terrace addition of 320 acres will not be available to leasing.

Average bottom-hole pressure for the north extension of the field is now under 50 pounds. Producers are finding it difficult to maintain the 250 barrel daily well minimum by gas lift. This means that other meeans of artificial lifting will supplant the method that was adopted as wells quit flowing.

Special pumps in combination with gas lift, hydraulic pumps and regular single well pumping units, using either electricity or gas engine power, will make up the equipment that will be installed during the year.

The area has 232 producing wells, with five drilling in the extreme north end dolomite section. There are 38 wells already equipped with pumping units.

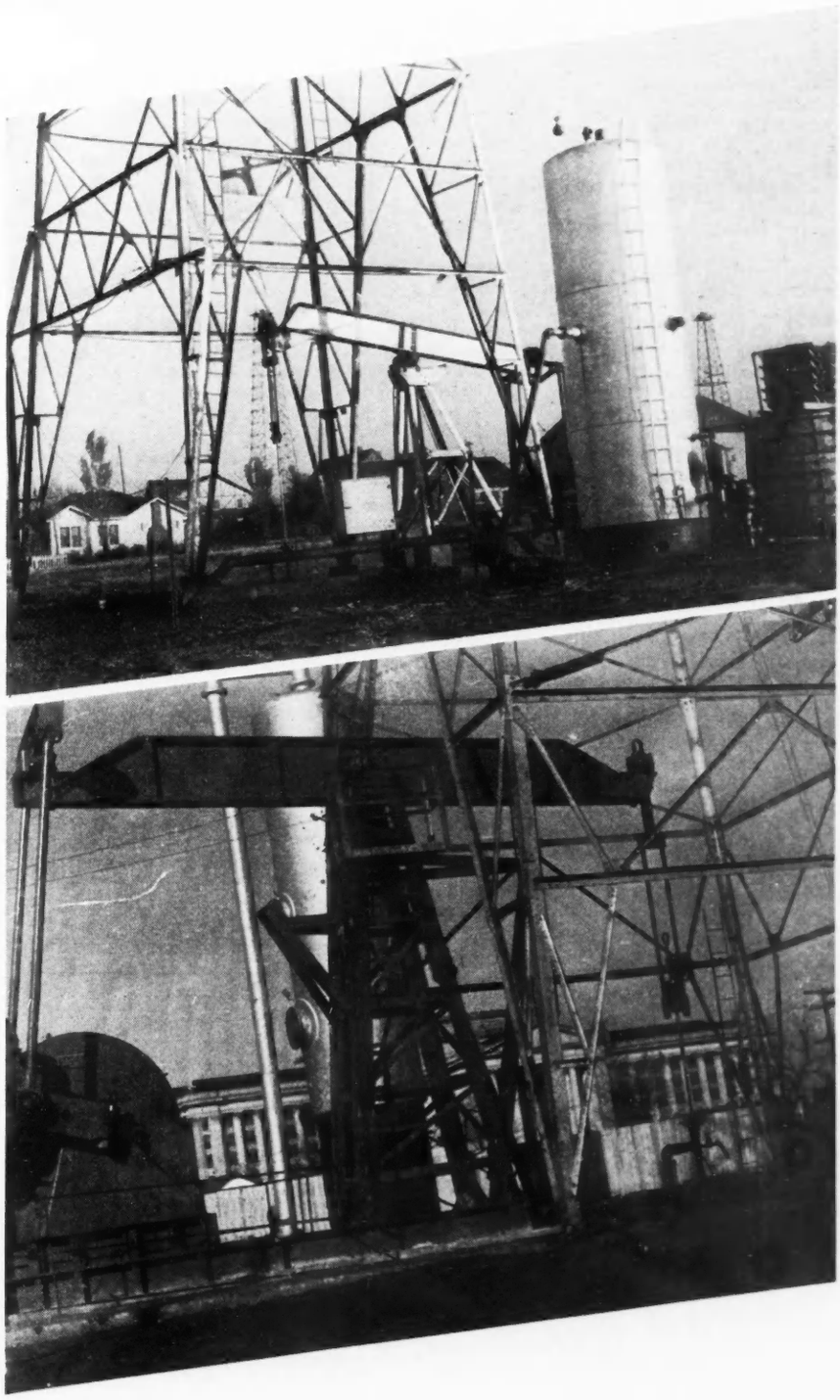
Pumping at Oklahoma City means lifting from the bottom. Average depth is 6490 feet. Pumping by rods and tubing is about 50 feet above bottom of the hole.

The area has 150 feet of sand, which will offer the most serious problem in pumping. Wells at the north end had low bottom-hole pressure on completion, consequently did not expell quantities of the formation under reservoir pressure as they did in the older south part of the field. Consequently the sand drops into the hole for pumps to handle.

Pumps now working use stroke between 64 and 74 inches. They are operated at 17 to 18 strokes a minute. These units are capable of pumping up to 450 barrels daily.

It is the opinion of William J. Armstrong, chief conservation officer of the Oklahoma Corporation Commission, that the output of the Oklahoma City field will jump 50,000 barrels daily when wells of the north extension are all equipped to pump. Experiments of his department have indicated that the 150 feet of average sand thickness carries high oil saturation, a condition not accepted when early drilling there resulted in low bottom-hole pressure as well as rapid drop after completion.

**A fence around the well site is required equipment in north extension wells. Life goes on in and from the homes nearby. Both adults and children must be kept out.**



**Adjoining state property around the capital is the first to draw the heavy pumping equipment, which must be brought to 200 wells during the next year.**

**Quiet operation is an extra demand in the area. Consequently electric motors and multi-cylinder gas engines are esential as prime movers. Night pumping must not disturb slumber.**

# OKLAHOMA FIELDS

## *Fourth well completed in Oolitic lime in Fox area.*

* * *

## *Wildcat in Marlow area pumps 40 barrels per day.*

**Ardmore.**—Most interesting area in Oklahoma last week was the southern part of the state where another well started producing from Oolitic lime, third producer for the formation in the old Fox pool of Carter County. The other well there, which came in two weeks ago, continued flowing. The new well gives the sector four producers from the deep lime pay.

Latest well, which was being given tests as the week drew to a close, was Gulf Oil Corporation's Johnson 1, C SW NW 27-2s-3w, last reported as having made 109 barrels of oil over a 24-hour period. It was bottomed at 7909 feet in the lime, and was flowing through 2½-inch tubing. Following acidization with 10,000 gallons and a 100-barrel oil load, the well made 36 barrels of oil net, and had gas estimated at 2,000,000 cubic feet. Observers in the area reported the well had been showing steady production estimated at about 10 barrels per hour.

The other test, which came in December 17, was Gulf Oil Corporation's Smith Estate 1, C SW SW 26-2s-3w, which was the third Oolitic lime producer there, flowing 278 barrels of oil in the last 8 hours. It was producing from 7773 feet. Early in the week the test was flowing around 50 barrels of 66.5 gravity crude per hour through a very small choke, with gas gauged at 21,821,000 cubic feet. It has been shut in after an official production of 575 barrels of oil in 20½ hours.

Carter Oil Company's Carter-Harley 1, C NW NW 19-2s-3w, also in Carter County, was drilling ahead below 5260 feet. The well was reported running nearly 500 feet low, looking none too good.

In the Marlow area of Stephens County, Ed Parsons et al's Blake 1, C SW NW 22-2n-8w, was pumping approximately 40 barrels of oil a day from the plug-back total depth of 5020 feet. The test was originally carried to 5745 feet.

Northwest of Marlow, Coline Oil Company's Johnson 1, SW SE NE 1-2n-8w, continued having trouble with casing which collapsed at 8689 feet. Operators had run a 5-inch liner in an effort to get through the casing, but the liner became hung in the hole. Fourth well in Oklahoma to go to 10,000 feet, the well was plugged back to 9164 feet. It was originally drilled to 10,001 feet.

### Oklahoma City Sector

Although overshadowed by the developments in the southern part of the state, the Oklahoma City sector came through with an important development. Carter Oil Company et al's Booher 1, CWL NW SW 16-25n-3w, in the Lamont area of Grant County, drilled to 5415 feet, a drill-stem test was taken with packer set at 5400 feet. Opened for 40 minutes, the test immediately made gas and some mud, during the first 27 minutes. The well then made some oil and salt water with an estimated 1,500,000 cubic feet of gas, flowing about 2 percent oil and the balance salt water and drilling mud. The hole was reamed down and it was to core ahead to 5418 feet where another drill-stem test was to have been made.

Nearby, Carter Oil Company et al's Barclay 1, CEL SE NE 17-25n-3w, was drilling ahead below 4420 feet in shale. Magnolia Petroleum Company's Reynolds 1, NEc SE 19-25n-5w, was fishing drill pipe at 5480 feet, the total depth.

In the Lucien field of Noble County, Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Henn 2, SW SE NE 32-20n-2w, was drilling below 5090 feet after flowing 150 barrels of oil in 11 hours by heads. Production was from between 5007 and 5048 feet in the first Wilcox sand.

In the Langston area of eastern Logan County, Ohio Oil Company may deepen Knight 1, SE NE SW 12-17n-1w. At 5056 feet the well is averaging 15 barrels of high gravity crude daily. It may be carried 20 to 25 feet deeper.

Near Waukomis in Garfield County, Hollenback et al's Clark 1-A, NWc 34-21n-6w, was drilling below 6440 feet. Top of the Mississippi was reported as being at 6355 feet. A small show of oil and gas was reported between 6267 and 6275 feet.

In Kay County, E. W. Jones was plugging Dorsett 1, SE SW NW 25-26n-1w. The well had top of the Wilcox sand at 4255 feet and cored from 4263 to 4267 feet for a 9-foot recovery, consisting of hard, white, salty sand. A test at that depth showed only salt water.

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### Tulsa Sector

Carter Oil Company et al's Claytor 1, CWL NE SW 27-2n-9e, in the Centrahoma area of Coal County was acidized with 3000 gallons, given a 320-barrel oil load and was waiting on the acid reaction. At a plug-back depth of 6482 feet, it produced 103 barrels of oil over a 24-hour period. Some mud and water was had with each production period, swabbing and bailing. With the fill-up continuing, operators were looking forward to results of the latest test.

In the Jesse pool of Pontotoc County, Continental Oil Company's Smith 1, NW SW SW 2-1n-7e, perforated the Hunton lime from 3997 to 4012 feet, following which it was acidized with 3000 gallons and given a 180-barrel oil load. The well has been swabbing but as yet has not recovered the oil load. Total depth was 4131 feet in Sylvan shale, with top of the Hunton lime at 3994 feet.

Deep Rock Oil Corporation's Garrett 2, SE NE SE 3-1n-7e, cleaned out to the bottom and made two flows, but no estimate of production was made. Tubing was being run and the well will be acidized with 7000 gallons.

Continental Oil Company's C. V. Thompson 1, CSL NW SW 35-2n-7e, bridged 250 feet off bottom and was bailing 1½ bailers of salt water per hour. The test had only a very small show of oil. It was trying to knock the bridge out. It was at 4562 feet in Hunton lime, topped at 4272 feet.

In the Tupelo area of Coal County, Phillips Petroleum Company was preparing to abandon Beck 1, SE SW SW 6-1n-9e, at 5403 feet in Wapanucka lime.

Northeast of Scipio in Pittsburg County, American Oil Refining Company's Beeler 1 (formerly Oklahoma District Oil Company), NEc SW 7-7n-14e, was waiting on results of a shot at 4976 feet in the Cromwell sand. The well was drilled to 6200 feet, but it was decided to test the upper horizons.

## *Strike 14 Miles West of Avoca*

**Abilene, Texas.** — Grisham-Hunter Corporation's Applin 1, north central Jones County and about 14 miles west of the Avoca field, nearest production, opens a large territory for prospecting in showing for a producer in the Wastika sand series. The well developed 900 feet of 34 gravity oil from pay at 2640-42 feet. Production test will be made at this level.

The company is obligated to make a deep test on the 2400-acre block supporting Applin 1, which is located near the center of SW½ Section 32, Block 1, BBB&C Ry. Survey, about five miles southwest of Stamford.

Humble Oil & Refining Company's Hollum 1, south offset to the northernmost producer in the Avoca field, flowed 70 barrels of oil the first hour and averaged 38 barrels hourly the next two hours on a ¾-inch tubing

choke from Canyon lime at 3214-24 feet. Owen-Snebold Oil Corporation's Haterius 1, discovery well for the Canyon horizon in the Ivy pool, northwestern Shackleford County, swabbed and flowed 266 barrels oil and 21 barrels water in 22 hours from lime at 3208-15 feet.

A larger initial rating is due from this strike when it is treated with acid.

## OKLAHOMA

### Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| CADDO COUNTY— | | |
| Magnolia, Headland 6, sw nw ne 11-5n-9w | 70 | 3834 |
| Blake et al, Abernathy 1, ne se se 35-6n-10w | * | 5090 |
| CARTER COUNTY— | | |
| Samedan Oil Co., A-C Higgins 19, ne ne ne 7-2s-2w | 80 | 2500 |
| Lloyd Noble, H. H. Revelle 1, ne sw sw se 21-3s-2w | * | 4028 |
| Ideal O&G, Scroggins 13, nw se se 32-3s-3w | 8 | 1142 |
| Magnolia, Richards 74, nec ne ne sw 6-4s-3w | 13 | 1150 |
| Sinclair Prairie, Richards 16, se ne nw 9-4s-3w | 87 | 1087 |
| CREEK COUNTY— | | |
| Lease Inv., Allen 1, ne se se 35-15n-10e (pb 3143) | 156 | 3145 |
| W. C. Norris, Inc., Bruce 1, ne se ne 22-17n-9e | * | 3293 |
| GARVIN COUNTY— | | |
| Skelly Oil Co., Hinkle 4, sw nw sw 32-1n-3w | 100 | 3246 |
| HUGHES COUNTY— | | |
| Iglehart, Warren 1, nw ne sw 29-7n-8e | * | 3120 |
| Power, E. Cox 1, nw nw nw ne 21-9n-9e | ¶5 | 488 |
| JEFFERSON COUNTY— | | |
| Circle Oil Co., Seay 60, nw ne se sw 3-7s-5w | 121 | 1248 |
| Seay 61, se se nw sw 3-7s-5w | 17 | 1092 |
| Long, Yingling & Laucke, Seay 29, sw sw se sw se 3-7s-5w | 75 | 1090 |
| Bridwell-Continental, W. D. Seay "A" 7, nw ne ne nw 10-7s-5w | 18 | 1111 |
| KAY COUNTY— | | |
| Higdon et al, Neiman 3, nw sw ne 9-26n-3e | * | 650 |
| LINCOLN COUNTY— | | |
| Summitt Drlg. Co., Thomas 1, ne ne nw 2-14n-2e | 665 | 5060 |
| Wilcox O&G, Sac & Fox 6, nw ne sw 15-14n-6e | 628 | 2987 |
| MURRAY COUNTY— | | |
| O. O. Owens et al, Frier Est. 1, ne se ne 34-15n-3e | * | 2741 |
| NOBLE COUNTY— | | |
| Continental, Conway "A" 2, ne ne se 16-23n-2w | 318 | 4290 |
| OSAGE COUNTY— | | |
| Gilmont Oil Co., 3, sw nw sw nw 29-20n-11e | 20 | 2421 |
| W. C. Elliott Bros. 2, sw se ne sw 10-21n-12e | 20 | 1478 |
| C. T. Mathews 7, ne nw ne 10-23n-8e | * | 1608 |
| Peters & Sinclair Prairie, 20, nw sw nw ne 24-24n-7e | 10 | 756 |
| Lewis Prod. Co., 5, sw ne sw sw 27-24n-7e | 303 | 2667 |
| Link Oil Co., 2, nw ne ne 34-25n-9e. | * | 2180 |
| PAYNE COUNTY— | | |
| Deep Rock Oil Corp., Waltman 1-A, 26-18n-3e | ¶15 | 1515 |
| PONTOTOC COUNTY— | | |
| Continental, King "A" 2, nw sw se ne 26-1n-8e | * | 770 |
| Crusaders, Morin 8, nw sw se 20-2n-7e | 1675 | 4080 |
| Magnolia, Gail Statler 4, ne se sw 28-2n-7e | 1424 | 3270 |
| Ramor, Balthrop 1, se ne se 10-4n-6e | 72 | 1180 |
| POTTAWATOMIE COUNTY— | | |
| Exchange, Risenhoover 1-A, c e½ sw se ne 14-7n-4e (pb 3118) | 28 | 3122 |
| SEMINOLE COUNTY— | | |
| Mid-Continent, S. Harjo 1-A, se ne ne 14-5n-7e | 130 | 4389 |
| Magnolia, A. Reed 2, se nw ne 26-5n-7e (pb 4070) | 591 | 4179 |
| P. Traugh, Scroggins 5, sw nw se 22-6n-6e | * | 3841 |
| Amerada et al, Parks 6, sw ne sw 35-11n-5e | 47 | 4610 |

### *New Russell County pool indicated possibility*

**Wichita.**—Possible opening of a new pool for Russell County was the only item of particular importance from the Sunflower state as it ended the short holiday week.

I. W. Murfin and Vernon Oil & Gas Company's Persons 1, NEc 31-15s-15w, south of the Boxberger pool of Russell County, was the closely watched test. An undetermined amount of oil was standing in the hole, coming, presumably, from Siliceous lime at 3386 feet. Red rock was found from 3377 to 3380 feet and the show was had in the following six feet of lime. The well appears to be running 40 to 50 feet higher than any other well in the area. Drilled on a farm-out from Skelly Oil Company, the well is two miles southwest of Lario Oil & Gas Company and Vernon Oil & Gas Company's Steinert 1, wildcat discovery well which made a potential of 386 barrels of oil. The test has been shut in, and preparations were under way for a potential test.

One-quarter mile north of the first commercial gas producer for Sedgwick County, W. G. Talbott and Harwood Oil Company's Downs Estate 2, CSE NW 32-28s-2w, had top of the Stalnacker sand at 2211 feet and was underreaming 8-inch casing to that depth before drilling into the gas zone, expected within the next few feet. First producer on the 160-acre tract was completed several weeks ago for 6,600,000 cubic feet of gas from sand at 2229 feet. Cities Service Oil Company will lay a lateral line to the area to connect with their main artery from the Texas Panhandle as soon as the second test is brought into production.

Spotted saturation was showing at Carter Oil Company's Hoglund 1, C W/2 SW NW 8-17s-3w, in the Lindsborg area of McPherson County, which was drilling ahead below 3387 feet in Viola lime. On a drill stem test, opened for 21 minutes, the well showed nothing.

Skelly Oil Company completed Volkland 1-B, NW SW NW 5-18s-10w, in the Stumps area of Rice County, for 3985 barrels of oil daily from Kansas City lime at 3006 feet. Production was accompanied by 5,000,000 cubic feet of gas. In order to prevent waste of gas, a new procedure was followed in completing the well. Casing was set at 2993 feet, five feet in the gas sand, and the test was then drilled in with rotary tools to 3004 feet and to the total depth of 3006 feet with standard tools. North offset to the new producer made 45,000,000 cubic feet of gas when brought in, and prompted use of the same method at Volkland 1-B.

In the Ellsworth County portion of the pool, to the north, Stanolind Oil & Gas Company's Stumps 1, SWc NE 30-17s-10w, cored from 3273 to 3280 feet in Siliceous lime and had an odor

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| STEPHENS COUNTY— | | |
| Gulf, L. Sims 12, ne sw sw 13-2s-4w | 2 | 551 |
| Geo. L. Pace, Allen 15, ne sw se ne 3-2s-8w | 50 | 2205 |
| TILLMAN COUNTY— | | |
| I.T.I.O., Dickey 1, ne se nw 1-3s-19w | 298 | 3073 |
| TULSA COUNTY— | | |
| Gilbert & Wilson, Stiel 1, ne sw sw 10-19n-10e | * | 918 |
| S. W. Anthony, Wilcox 7, w½ ne nw 3-16n-12e | * | 2316 |
| Hollie, Tr., Johnson 1-A, sw sw sw se 15-16n-12e | 25 | 1987 |

*Failures; †Junked; ¶Million cu. ft. gas.

## KANSAS

### Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| BARBER COUNTY— | | |
| Olson Oil Co., Schwantz 2, sw se se 30-11s-11w | 821 | 4294 |
| BARTON COUNTY— | | |
| Stanolind, Redetske 2, nw nw se 26-16s-13w | 1643 | 3411 |
| Shell, D. Ehrlich 1, sw sw sw 1-16s-14w | 1292 | 3290 |
| Phillips, Craft 3, nw sw ne 10-17s-11w | 2012 | 3324 |
| Texas, Hoffman 6, sw ne nw 6-16s-13w | 2820 | 3361 |
| ELLIS COUNTY— | | |
| Deep Rock, Baumer 15, nw nw sw 27-11s-17w (pb 3646) | * | 3721 |
| Baumer 24, ne sw ne 27-11s-17w (pb 3521) | * | 4002 |
| Bradley Oil, Jensen 1, nw nw se 36-11s-19w | * | 3780 |
| Helmerich & Payne et al, Steffins 1, nw nw se 7-13s-20w | * | 3888 |
| Continental, Baumrucker 1, ne ne sw 25-14s-16w | * | 3394 |
| FORD COUNTY— | | |
| Olson et al, Fowler 1, c sw¼ 26-27s-22w | * | 5843 |
| GRANT COUNTY— | | |
| Columbia Fuel Co., Hall 1, center sw¼ 33-28s-36w | ¶6.5 | 2751 |
| R. K. Wilson, Smith 1, c ne¼ 36-28s-37w | ¶6 | 2720 |
| GREENWOOD COUNTY— | | |
| Whittiker & Johnson, Cannon 1, se se nw 8-26s-13e | * | 1504 |
| HARVEY COUNTY— | | |
| Sunray, Hege 3, ne nw sw 13-22s-2w | 1193 | 3285 |
| Olson, Nelson 6, se ne nw 30-23s-3w. | 341 | 3360 |
| McPHERSON COUNTY— | | |
| T. C. Johnson & Darby, Shaw 3, ne nw sw 21-19s-1w | 298 | 3403 |
| Continental et al, Hetske 1, se sw sw 20-31s-1w | 510 | 3320 |
| Phillips, Galle 1, nw nw ne 11-21s-2w | * | 3565 |
| RENO COUNTY— | | |
| Schnider et al, Krocker 1, ne ne ne 12-22s-5w | * | 4008 |
| Ohio, Lawson 1, ne ne nw 15-26s-9w (pb 3942) | ¶5 | 4005 |
| A. Jones et al, Shepherd 1, nw nw nw 22-26s-9w (pb 3587) | 50 | 4153 |
| RICE COUNTY— | | |
| John Hanna et al, Carey 1, ne nw nw 30-18s-8w | * | 1530 |
| Continental, Connery 1, se se se 36-18s-8w | 1749 | 3351 |
| Torrey & Feaster, Lisk 2, se ne sw 32-19s-9w | 244 | 3255 |
| Saco Oil Co., Wickerham 1, ne sw se 7-20s-9w (pb 2240) | * | 2280 |
| Holland, C. N. Ray 1, nw nw nw 18-21s-6w | * | 3548 |
| RUSH COUNTY— | | |
| Morgan & Flynn, Crowell 1, c ne¼ 23-18s-16w | ¶50 | 3553 |
| RUSSELL COUNTY— | | |
| Stanolind, J. H. Dortland 15, sw ne se 5-14s-15w | 161 | 3097 |
| Stanolind, M. Gorham 16, se ne nw 9-14s-15w | 543 | 3080 |
| J. C. Shaffer, Polcyn 2, nw nw ne 14-14s-15w | * | 3272 |
| W. I. Southern, Meharg 3, ne nw ne 18-15s-13w | 594 | 3047 |
| Texas, Schnoor 2, nw ne sw 31-14s-13w (pb 2985) | 1035 | 3147 |
| STAFFORD COUNTY— | | |
| Lindsay et al, A. L. Tieperman 1, sw sw nw 31-22s-12w | * | 3855 |
| STEVENS COUNTY— | | |
| Panhandle Eastern, Light 1, c ne¼ 2-32s-38w | ¶8.75 | 2800 |
| Kansas Oil Corp., Ben Nix 1, c nw¼ 3-34s-39w | ¶11 | 2727 |
| WOODSON COUNTY— | | |
| Sheedy et al, Tipton 3, nw nw ne 29-25s-14e (pb 1432) | 50 | 1460 |

*Failures; †Junked; ¶Million cu. ft. gas.

of oil. Seven-inch casing was set at 3273 feet.

East offset to the discovery producer in the Andover pool of Sedgwick County, National Refining Company's Pray 1, SW NW SW 31-27s-5e, encountered a strong odor of gas at 2012 feet in Stalnaker sand and was shut down to run 10-inch casing. The test is across the county line and in Butler County, and will be completed in the lower horizons, probably in the Wilcox sand where production is expected. Eight-inch casing will be run. Discovery producer was completed for 189 barrels of oil daily from a total depth of 3096 feet in Wilcox sand.

Potential tests have been started at Carter Oil Company's Dennis Hogan 2, in Section 11-17s-11w, in the Kraft pool of Barton County. It pumped 126 barrels of oil the first four hours and 120 barrels the following four hours. It was at a total depth of 3365 feet in Silicious lime.

Pryor, Lockhart et al's Brown 1, NE SE SE 34-33s-3e, southeast of production in the Rainbow Bend pool of Cowley County, had 14 feet of cavings in the hole. Earlier operators reported the well flowed 32 barrels of oil in four hours from Bartlesville sand at 3403 feet. The cavings were found when tubing was pulled.

A McPherson County wildcat was to be deepened to lower horizons after water was found in the chat. Well was Newton, Boyle and Grossman et al's Diener 1, SEc NE 35-19s-1w, southeast of Canton. Water was found in the chat from 2945 to 2950 feet. At 2915 feet the well had encountered approximately 2,500,000 cubic feet of gas.

In the Trapp South pool of Barton County, The Texas Company's Hoffman 6, SW NE NW 6-16s-13w, drilled to a total depth of 3361 feet in Siliceous lime and made a potential of 2820 barrels of oil. Top of the formation was found at 3345 feet.

Sunray Oil Company's Hege 3, NE NW SW 13-22s-2w, in the Burrton pool of Harvey County, which established a pumping potential of 1193 barrels of oil, was being acidized. It was at 3825 feet in Hunton lime.

# ILLINOIS DEVELOPMENTS

***Olney Township wildcat flows 30 barrels oil per hour.***

* * *

***New operations suffer from adverse weather conditions.***

**Olney.**—Vickers & Frost's W. H. Farris, Section 18-3n-10e, Olney Township, Richland County, 3 miles south of here, was reported Monday night as flowing 30 barrels an hour after swabbing. The wildcat is bottomed at 3050 feet and production is from the McCloskey sand. It is the second try in the township, R. Nelley et al's Baughman 1, Section 22-3n-10e failing to find production when drilled to 3252 feet.

Carter Oil Company is moving in equipment for Cox 1, Section 14-4n-5e, Northwestern Clay County, west of Louisville, which is scheduled for 6000 feet. The company has several thousand acres under lease around the location.

Hollingsworth, Inc., announced abandoning A. Wagner 1, Section 5-3n-14w, Claremont Township, at 3248 feet, thereby dashing, for the present, hopes of adding East Richland County to the producing area.

Another wildcat failure was that of Benedum & Trees Oil Company on the Van Zandt tract, (Moore 1) Section 24-6n-1w, Bear Grove Township, Fayette County, which was plugged near the 3000-foot mark. A small oil showing was logged between 2822 and 2839 feet, but a drill stem test indicated it was insufficient of commercial production.

Kingwood & McMahon's Negley 1, Section 31-5n-93, Denver Township, Richland County, was plugged and abandoned at 3200 feet.

In the extreme southern part of the Illinois Basin area, drillers on H. Nichols 1, Section 12-4n-4e, Meacham Township, Marion County, Tuesday reported that the old cable tool machine which has been at the location for almost two years had bit into six inches of saturation. Drilling has stopped and preparations are being made to complete. Ownership of the test has changed several times, and at present it is believed to belong to Marion Oil Company. It is listed in the last oil and gas drilling report of the Illinois geological survey as a Mahutska Oil Company (T. E. Baldwin) test.

Recent rainy weather has seriously impeded progress in all sections of the coal basin area. New operations especially have suffered during the past two weeks, while operations were slowed at many active locations because of the inability of moving material over the muddy ground.

Pointing out that many companies with large acreage under lease have not yet begun their drilling campaigns, although some locations have been selected, Don L. Carroll, of the Illinois geological survey, predicts that the discovery of new oil fields in the state has just started. "Careful scientific investigations precede the drilling ventures in most cases and control the choice of drilling sites," Carroll declares in a bulletin issued last week. "Until this preliminary work has been completed in an area and other factors have been weighed as favorable, 'big time' companies refrain from actual drilling. The fact that leading companies are rapidly choosing locations, and keeping them secret for the time being, indicates that drilling operations will increase in the future. This testing, in all likelihood, will reveal the location of new producing areas in counties that have not yet made the headlines."

### *Inspect construction progress*

**W. G. Hanrahan (right), of Jones & Hanrahan, was in active charge of construction on Atlantic Refining Company's new 220-mile gasoline line extending from Williamsport, Pa., to Buffalo and Rochester, New York. He was assisted by General Superintendent T. A. Hester (left). They are here checking up on the progress of the work in the rugged hills near Savona, New York.**

# *The St. Peters Sand at Duquoin*

By H. A. WHEELER, Mining Engineer

The recent completion at 5153 feet of a dry hole near Duquoin, in Perry County, Illinois, in the St. Peters sand, which is looked upon as having deep producing possibilities in the basin region, should not be considered too seriously.

The well, drilled for J. H. Forrester on his own lands, is located a mile north of Duquoin. Previous to 1910, there was a salt plant on this tract that obtained its brine from several adjacent wells that were 700 to 1500 feet deep. One well was drilled to 3600 feet, and for many years was the deepest well in Illinois.

All sands encountered below 500 feet on this tract have produced salt water. Some were so rich as to make it profitable to produce salt for many years by evaporation, as adjacent coal mines furnished cheap fuel.

The unusual richness in salt of all eight known Illinois producing sands at Duquoin shows complete absence of underground circulation, and the failure to find oil is not discouraging where favorable conditions exist.

Duquoin is at the southern end of what is known as the Duquoin-Sandoval anticline that strikes north and south. At Duquoin, it is a steep easterly dipping monocline, rather than an anticline, as the westerly reversal is insignificant.

In northern Illinois, the St. Peters sandstone is a prolific producer of fresh water, especially near Chicago, which shows underground circulation. But the southern third of the state, south of Vandalia, the St. Peters carries salt water, and hence may prove oil bearing on favorable structures.

The St. Peters is 100 to 150 feet thick where it outcrops in Missouri on the western edge of the Illinois Basin, and is a soft, white sandstone with a high porosity. As it underlies the Illinois basin, it justifies a possible deep testing campaign. It is likely that when the present play to the McCloskv sand expires that the St. Peters will be sufficiently tested to determine its oil value.

## ILLINOIS

### Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| CLARKE COUNTY— | | |
| Firman Equipment Corp., Ingersol 56 | 5 | 483 |
| Stohr Bros., Elliott 11 | 3 | 406 |
| Hassett & Phillips, Statler 1 | ¶ | 523 |
| CLAY COUNTY— | | |
| Gordon Oil Co., Carroll 3 | 460 | 3006 |
| Pure, Moseley 1 | 386 | 2980 |
| S. Bechtel 4 | 265 | 2974 |
| Wicklund Dev. Co., McCauley 1 | * | 3183 |
| CLINTON COUNTY— | | |
| Adams O&G Co., Schmitz 1 | 156 | 1384 |
| McClanahan Oil Co., Hester 1 | * | 1724 |
| CRAWFORD COUNTY— | | |
| Boyd et al, Wiman 1 | 66 | 1193 |
| Salvage O&G Co., Crozier 1 | * | 1830 |
| Dinsmoor Oil Co., Parker 11 | * | 954 |
| FAYETTE COUNTY— | | |
| Tull et al, Richardson 1 | * | 1601 |
| HAMILTON COUNTY— | | |
| Carpenter et al, Clark 1 | * | 3324 |
| HANCOCK COUNTY— | | |
| Brown et al, Castlebury 1 | * | 464 |
| MARION COUNTY— | | |
| Adams O&G Co., Merryman 14 | 70 | 1421 |
| Merryman 15 | 65 | 1429 |
| Howell 1 | 60 | 1414 |
| Geo. Wasem 2-B | 32 | 1445 |
| Freyer 3 | 16 | 1426 |
| J. Staley, Carter 1 | 30 | 1448 |
| Target Drlg. Co., Zoller 1 | * | 2500 |
| H. & H. Drlg. Co., Hills 1 | * | 1459 |
| Boswell et al, Smith 1 | * | 1463 |
| RICHLAND COUNTY— | | |
| Pure, Snyder 1 | 1051 | 3000 |
| Susanna Tateman 1 | 313 | 3006 |
| John O. Coen 1 | 284 | 3000 |
| Fleming 1 | 133 | 3000 |
| Frost 2 | 29 | 2975 |
| Correll 1 | * | 3044 |
| Robinson & Gordon, Park 1 | 92 | 3043 |
| Wiser Oil Co., Trevett-Mattis 1 | * | 3235 |
| WABASH COUNTY— | | |
| Cecil Keneipp, E. Canedy 1 | * | 1644 |
| Patton Oil Co., Chapman 1 | * | 1500 |
| WAYNE COUNTY— | | |
| Pure, Gill 1 | 536 | 3084 |

*Failures; †Junked; ¶Million cu. ft. gas.

## *78 West Virginia drilling permits*

**Charleston, W. Va.**—Seventy-eight permits for oil and gas drilling were issued in West Virginia during November, bringing the 11-month total for 1937 to 979, an increase of 29 percent over the 761 issued in the corresponding period last year.

November permits showed a seasonal decline from the 96 issued in October, but were 28 percent above the 61 issued during the corresponding month of 1936.

For the first time this year, a permit was issued for a test in Barbour County. Kanawha and Ritchie counties tied for first place during November with 8 permits each, and were closely followed by Gilmer County with 7.

Numbers issued for other counties are: Boone 6, Braxton 2, Cabell 5, Calhoun 2, Clay 1, Doddridge 1, Harrison 1, Jackson 1, Lewis 1, Lincoln 4, Marion 3, Mingo 2, Monongalia 4, Pleasants 1, Putnam 2, Roane 2, Tyler 3, Wayne 4, Wetzel 2, Wirt 5, Wood 2.

## *Northeast Oklahoma A.P.I. schedules meeting*

**Tulsa.**—Next meeting of the Northeast Oklahoma Chapter, The American Petroleum Institute, will be held at Bartlesville, January 12, at which time members of the organization from Tulsa and Nowata will be shown through the Reda Pump factory, and will inspect the new Bureau of Mines buildings there. At 8:00 p.m., in the Empire Masonic building, members will hear the D.M.F. glee club and will be shown a picture "Through Oil Fields of Mexico," presented by the Bureau of Mines. Principal speaker of the evening will be L. R. Hodell, Carter Oil Company, who will deliver a talk entitled "Circumferential Field Welding of Casing." A moving picture will illustrate the process. Arrangement of the meeting is in charge of C. S. Warren, Cities Service Oil Company and L. H. Thawley, Phillips Petroleum Company, chairman and co-chairman respectively, of the Bartlesville district of the chapter.

## *Vigo County test has hole full water, little oil*

**Pittsburgh.**—Carter Oil Company's R. L. Drake 2, Section 15-10n-10w, in the Prairie Creek pool of Vigo County, Indiana, reports a hole full of water and a small oil showing from the lower Devonian horizon. The test is bottomed at 2415 feet.

In the New York-Pennsylvania deep sand gas area, the week's sole completion was the seventeenth successful test in the Woodhull Township field, Steuben County, New York, opened during the past summer. Hanley & Bird's E. H. Ackerman 1 topped the Oriskany at 4026 feet and had an initial open flow of 12,600,000 cubic feet a day when bottomed 14 feet in that formation. Initial rock pressure was 1500 pounds. Completion of the test lowers to 11 the number of active locations in the field. As many more are drilling in other parts of the state-line area.

Indication that Clinton and Mount Pleasant townships of Wayne County, Pennsylvania, may be the scene of exploratory work this summer is given with the filing of leases on 3911 acres of land in the area during the past few weeks. Many of them were filed in the names of Hayden Morgan and Kenneth F. Mills, of Scranton. Gas was discovered 55 years ago 3 miles north of Honesdale but was never developed.

## *McCloskey sand play spreads into Kentucky*

**Henderson, Ky.**—Spread of the McCloskey sand play of Illinois into Kentucky was attested during the week by starting the first McCloskev wildcat in Henderson County on the C. T. Blackwell farm on Green River by Hoosier Drilling Company. The cable tool project has a tentative objective of 2500 feet.

The wildcat is located in the northeastern part of the county between the shallow fields of Daviess, Ohio, and McLean County, which have been producing for 15 years, and the new Illinois development centering around Clay City.

Practically all of Henderson County has been under lease for six months, a substantial portion of the leases being held by major companies.

## *New era looms for Indiana*

**Indianapolis, Ind.**—Pointing out that more than 800,000,000,000 cubic feet of natural gas and 170,000,000 barrels of oil have been extracted from Indiana wells since commercial production began late in the 19th century, M. M. Fidlar, assistant Indiana geologist, said that Indiana's oil and gas industry appears to be moving toward a new era of development when he addressed 200 members of the Indiana Society of

Professional Engineers at their annual convention here December 20.

"With a new interest in drilling, a better price for crude oil and improved methods of recovering and handling oil and gas, this industry seems to have a much brighter outlook for the next few years," he declared.

Fidlar estimated that more than two million acres were under lease now for oil and gas drilling in Southwestern Indiana, much of which had not yet been tested. At present the principal oil and gas producing areas are in Vigo, Sullivan, Knox, Gibson, Pipe, Vanderburgh, Posey, Martin, Perry and Spencer counties. He told the engineers that the state's 1936 oil output was approximately 825,000 barrels having an estimated value of $1,000,000, and explained that acidization and repressuring, principally with water, have been used successfully to boost production of old wells.

## *Attack Pennsylvania utility rate law*

Constitutionality of a new Pennsylvania law which gives the public utility commission authority to impose "temporary rates" on utilities pending completion of rate investigations was attacked for the second time by Edison Light & Power Company last week. The law applies to all utility companies operating in the state and commission authorities have indicated they plan to use it in connection with their current state-wide investigation of natural gas companies.

Taking its action into federal court at Philadelphia, the company last week claimed that although the commission in October was enjoined by a federal court, it ordered the company the next month to establish temporary rates which the power firm said would reduce its gross operating revenues by approximately $435,000 annually. The company seeks an injunction restraining the commission temporarily from putting the rates into effect.

# EASTERN FIELDS
## Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| **OHIO** | | |
| ASHTABULA COUNTY— | | |
| Dillon O&G Co., Ring 5 | ¶.03 | 1640 |
| American Fork & Hoe Co., Moody 1 | * | 1870 |
| ATHENS COUNTY— | | |
| C. A. Cody, Jeffers 1 | ¶.14 | 600 |
| Kachelmacher O&G Co., Valley Mining Co. 2 | * | 2250 |
| Hocking Valley Drlg. Co. et al, New York Coal Co. | * | 3780 |
| BELMONT COUNTY— | | |
| N. C. Phillips, Taylor 1 | ¶.08 | 920 |
| Peters & Kirk, Dvorak 2 | * | 1736 |
| Dague et al, Hryvanak 81 | * | 1990 |
| CUYAHOGA COUNTY— | | |
| Wm. Dempsey, Lawrence 1 | ¶.12 | 2430 |
| GUERNSEY COUNTY— | | |
| Barnesville Dev. Co., Anderson 1 | ¶.14 | 1475 |
| KNOX COUNTY— | | |
| Pure, Miller 2 | 120 | 3140 |
| Kundtz-Hulse, Mossholder 3 | 20 | 3106 |
| LICKING COUNTY— | | |
| Lacknett et al, Reynolds 3 | 10 | 785 |
| Wehrle Gas Co., Vance 13 | * | 745 |
| LORAIN COUNTY— | | |
| Ohio F. G. Co., Clark Hrs. 1 | * | 2383 |
| Wittmer O&G Co., Belden 1 | * | 2733 |
| MEDINA COUNTY— | | |
| E. R. Edson & Son, Packard 21 | 1 | 387 |
| MEIGS COUNTY— | | |
| H. M. Nelson, Bengel 3 | ¶.10 | 825 |
| Holmes et al, Wickline 1 | * | 2040 |
| MORGAN COUNTY— | | |
| Penn Const. Co., Hummel 2 | ¶.07 | 1575 |
| MUSKINGUM COUNTY— | | |
| E. H. Everett, Vroom 3 | 10 | 3277 |
| Gas Prod. Co., Harrop 14 | 10 | 4150 |
| PERRY COUNTY— | | |
| Altier & Sons, Monahan 8 | * | 1070 |
| PUTNAM COUNTY— | | |
| Brown et al, Gearhart 2 | 95 | 1391 |
| K. G. Rogers, Billingsley 2 | 90 | 1384 |
| Morton Stewart Pet. Co., Westrick 1 | 20 | 1370 |
| SUMMIT COUNTY— | | |
| B. Johnson, Lamson 2 | * | 405 |
| TUSCARAWAS COUNTY— | | |
| East Ohio Gas Co., Aul 2 | * | 4504 |
| WASHINGTON COUNTY— | | |
| Schneider Oil Co., Richey 6 | 1 | 1045 |
| Trapp & Nickels, Dutton Hrs. 6 | 1 | 342 |
| Harry Binegar, Moore 7 | * | 1456 |
| **WEST VIRGINA** | | |
| CABEL COUNTY— | | |
| Bowen Gas Co., Childers 1 | ¶.43 | 3226 |
| CALHOUN COUNTY— | | |
| O. D. Jones, Parsons 1 | 30 | 2280 |
| Boggess & Starcher, Wilson 2 | ¶2.00 | 2050 |
| CLAY COUNTY— | | |
| Virginia G. & O. Corp., Brown et al 1252 | 4 | 1848 |
| GILMER COUNTY— | | |
| McCall Drlg. Co., Fling Hrs. 1 | ¶2.00 | 1890 |
| KANAWHA COUNTY— | | |
| United F. G. Co., Canterbury 4753 | ¶13.00 | 5155 |
| United Carbon Co., Knight 1 | ¶7.47 | 4744 |
| West Va. Gas Co., St. Clair et al | ¶.83 | 1820 |
| Columbian Carbon Co., Burdette 1 | ¶.12 | 5094 |
| LINCOLN COUNTY— | | |
| South Penn Oil Co., Woodrum 8 | 4 | 3750 |
| Holley-Stephenson 8 | 4 | 2520 |
| Pridemore et al, Pridemore 2 | ¶.07 | 3440 |
| RITCHIE COUNTY— | | |
| W. M. Schroeder, Burbridge 3 | ¶.20 | 1800 |
| Lima Gas Co., Goff 1 | ¶.05 | 1900 |
| W. R. Hays, Livingston 1 | ¶.04 | .... |
| Creed Barker, Frederick | * | 1801 |
| Patterson & Pope, Patterson 7 | * | 1990 |
| WAYNE COUNTY— | | |
| Kentucky-West Va. Gas Co., Blankenship 1 | ¶.58 | 674 |
| **KENTUCKY** | | |
| BRECKENRIDGE COUNTY— | | |
| Kentucky Nat. Gas Co., Wroe | ¶.32 | 463 |
| CARTER COUNTY— | | |
| Arthur Bryson, Burton 1 | ¶.70 | 315 |
| DAVIESS COUNTY— | | |
| Daugherty & Ellis, O'Flynn 2 | 50 | 1090 |
| Rex-Pyramid Oil Co., Cooper 5 | ¶1.19 | 627 |
| FLOYD COUNTY— | | |
| Fred Williams, Honaker 2 | 25 | 1800 |
| Southeast Gas Co., Dillon 3 | ¶1.90 | 1160 |
| HANCOCK COUNTY— | | |
| Ray Cooper, Boling 1 | 5 | .... |
| F. Damron et al, Bates 5 | ¶.07 | 520 |
| DeHart & Lykins, Nugent 1 | * | .... |
| KNOTT COUNTY— | | |
| Hamilton, Hindmas School 12-E | ¶.17 | 2835 |
| LAWRENCE COUNTY— | | |
| Rockcastle Gas Co., Hall 1 | ¶.72 | 2489 |
| LEE COUNTY— | | |
| Thomas Whitmer, Tipton 6 | 8 | 473 |
| McLEAN COUNTY— | | |
| J. C. Miller, Bryant 4 | * | 826 |
| MAGOFFIN COUNTY— | | |
| Jenkins & Evans, Howard 1 | * | .... |
| MARTIN COUNTY— | | |
| Diedrich & Ware, Stepp 3 | 6 | 1327 |
| OHIO COUNTY— | | |
| A. Teller et al, Medcalf 1 | 25 | 670 |
| The Petroleum Co., Bellamy 11 | 20 | .... |
| Nollem O&G Co., Phillips 1 | ¶.70 | 550 |
| PIKE COUNTY— | | |
| United Carbon Co., Scott 1 | ¶1.65 | 1428 |
| POWELL COUNTY— | | |
| Mrs. Agatha Wireman, Townsend 22 | 10 | .... |
| **PENNSYLVANIA** | | |
| BUTLER COUNTY— | | |
| Geo. L. Yaste, J. Remison 1 | * | 1848 |
| GREENE COUNTY— | | |
| Dunn Mar O&G Co., Ullom Hrs. 2 | * | 3360 |
| INDIANA COUNTY— | | |
| Equitable Gas Co., G. F. Adamson 3230 | ¶.68 | 1160 |
| POTTER COUNTY— | | |
| Producers P&L Co., Whitman 1 | ¶14.00 | 5067 |
| WARREN COUNTY— | | |
| Belmont Quadrangle Drlg. Co., Lot 487 | * | 4370 |
| WASHINGTON COUNTY— | | |
| Carnegie Nat. Gas Co., Iams 3 | 5 | 3057 |
| F. M. Closser 1 | ¶.10 | 1945 |
| **NEW YORK** | | |
| STEUBEN COUNTY— | | |
| Hanley & Bird, Ackerman 1 | ¶12.60 | 4040 |

*Failures; †Junked; ¶Million cu. ft. gas.

## *Allred critical at opening of Texas land bids*

The Texas State Board for Mineral Development last week received bids on four ten-acre tracts in the Nueces River. No bids were received on several other tracts in other river beds which the Board had offered for sale.

The bids received are listed below:

C. W. Hoffman and K. F. Page of Eastland: For Tract 1, Block 2, Nueces River, $2,000 cash; one-eighth royalty; $3,000 out of 1/16 of ⅞ and drilling in 60 days if the river stage permits.

C. G. Glasscock of Premont: Tract 1, $1,500 cash, $3,500 out of one-eighth of seven-eighths, one-eighth royalty and $5 per acre rental.

Same bidder, Tract 2, $2,000 cash, $3,000 out of ⅛ of ⅞, $5 per acre rental and one-eighth royalty.

W. M. Allison and David B. Hawes, Freer: Tracts 4 and 5, $25 per acre cash and $25 per acre out of ⅛ of ⅞, with one-eighth royalty.

In the course of the meeting when the bids were opened, Governor James V. Allred took occasion to challenge the validity of a ten year renewal lease which State Land Commissioner McDonald had executed on December 7 to the Venmex Oil Company. The land leased is part of the big Wichita River in Wichita County, and includes 345 acres located near the new development in the K.M.A. area.

Governor Allred closely examined McDonald seeking an explanation for his reason in renewing the lease which the Governor said expired by its own terms nearly a year ago. At the conclusion of the examination, Allred and Railroad Commission Chairman C. V. Terrell, who is the third member of the Board, voted the following resolution. McDonald voted against the resolution.

1. That in the opinion of the Board, the lease was void and is of no force and effect, and the land commissioner was without authority to issue it.

2. That the lease had expired by its own terms, and by reason of the failure of Venmex to make monthly affidavits of pipe line runs; that the expiration was attested by the letter of the land commission forfeiting it.

3. That the Board only had authority to lease this river bed land.

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**Dallas, Texas.**—Nine Dallas independents, operating as Toddie L. Wynne, trustee, are preparing to launch a major drilling program on recently acquired proved and semi-proved leases in North and West Texas. A new corporation is to be created by the group shortly after January 1 to absorb the various holdings held by the trusteeship.

Leases held in the K-M-A field, Wichita County, and in the Wasson field, located on the Yoakum-Gaines County line, West Texas, will require considerable development during the fore part of 1938.

Participants in the trusteeship includes: Wynne, Dudley S. Golding, Clint W. Murchison, T. B. Cochran, Ruston L. Ardrey, A. E. Oldham, Geo. J. Greer, Wofford, Cain and A. F. Bowden.

# NORTH TEXAS FIELDS

***Lease play spreads from K-M-A to nearby counties.***

* * *

***Toddie Wynne's north flank outpost nears showdown.***

* * *

***Strawn zone has 82 producers, including 14 pumpers.***

**Wichita Falls.**—Enthusiasm stirred up by the long-deferred drilling boom in the K-M-A deep zone has caused the greater portion of Wichita County to come in for a share of the lease trading and prospecting. Substantial cash bonuses are being paid for leases radiating in all directions from the deep field, with interest shifting to the north portion of Archer County and along an east-to-west trend to include Clay and Wilbarger counties. Independents are setting the pace in acquiring acreage protection, although majors have pitched in on a conservative basis after mobilizing large staffs of geologists and land men to survey the next big high-gravity oil source.

Deep Oil Development Company, discoverer of the Strawn production in the old K-M-A shallow district, paid from $25 to $35 per acre in rounding out a drilling block in southeastern Wichita County, near Lake Wichita. Sam K. Vierson et al assumed an immediate drilling obligation in acquiring lease on a wildcat block, centering upon the W. T. Abernathy land, Section 9, Tarrant County School Land Survey, A-282, about 1 mile northwest of Iowa Park.

### Deep Burkburnett Test

Previously announced deep project for the Burkburnett shallow district proposed by R. H. King, Frabor-Hodges Company has resulted in the staking of location on the J. N. George tract, about 4¾ miles southwest of the once spectacular townsite campaign. Location is 990 feet north and east of the southwest corner of the J. Waldschmidt Survey, A-571, but in the O. Farish Survey, A-383. It is 3¾ miles west of a 3501-foot failure drilled in 1927 by Magnolia Petroleum Company and Continental Oil Company on the H. Beach land.

North flank of the K-M-A field reported another outpost near the showdown stage the past week. Toddie L. Wynne, trustee, et al's Waggoner Bros. 1, Lot 36, H. George Survey, A-454, was coring Strawn section at 3841 feet, with an elevation of 1037 feet. Top of lime marker was called at 2692 feet sub-sea, while a flowing producer 1½ miles to the southeast logged top of lime at 2621 feet below sea level.

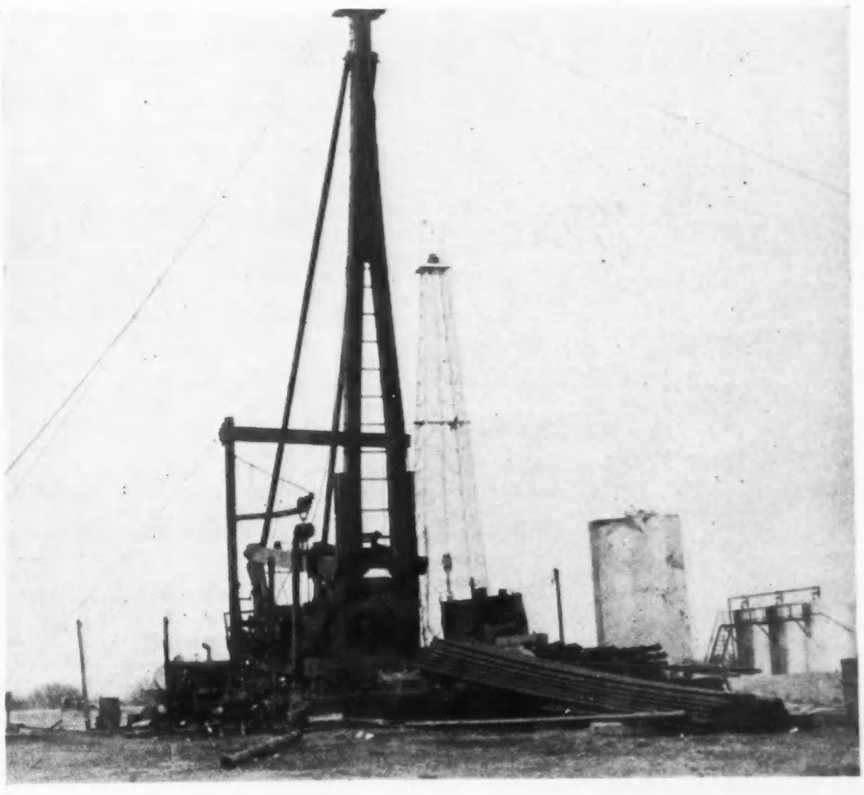
Large drilling campaign launched in the west portion of the K-M-A field following the completion of Jack Kadane et al's big producer on the Mangold land in mid-November is beginning to register on the completion list. Wichita Cotton Oil Company's Gin Lot 1, east offset and on a 5-acre site, flowed 1930 barrels of oil in 22 hours through casing with tools in the hole. The Kadane sand was found at 3720-30 feet, with an elevation of 1026 feet. Top of lime was called at 3628 feet, or 7 feet higher than the big well. Blackwell Oil & Gas Company's W. L. Hodges 1, half mile southeast of Gin Lot 1, logged top of lime at 3638 feet, or 2610 feet sub-sea, and has landed pipe at 3660 feet.

H. A. Schaeffer Oil Company (was E. C. Norwood et al's) W. P. Ferguson 1, NEc Lot 4, F. Peterswich Survey, A-343, only deep producer in Archer County section of K-M-A and a southwest outpost, flowed 999.72 barrels natural on proration gauge at 3886 feet.

Burk Royalty Company's W. L. Hodges 1, Lot 8, H.T.&B. Section 1, A-139, southeast outpost, has set liner and tubing after removing cavings caused by 180-quart nitro shot at 3932 feet, or 2924 feet sub-sea. This well flowed 93 barrels of oil in 24 hours after shot, and is likely to need pumping equipment in order to make its production allowable. Top of lime was logged at 3746 feet, or 2738 feet sub-sea. Deep rights are held by Magnolia Petroleum Company, Continental Oil Company and Arkansas Fuel Oil Company on acreage between this outpost and the main field.

Consideration of $1000 per acre, including $350 per acre cash and $650 per acre due from production, was paid by Sam K. Vierson et al for lease on the west 74 acres of the north 183 acres of the H. Wigley 343-acre tract, P. Castleman Survey, A-36, and C. T. Ry. Survey, A-51. Lease is north of the river and is considered proved.

Currently the K-M-A deep zone has 82 producers, including 14 pumpers, with production restricted to a top allowable of 58 barrels daily each, or an aggregate of about 4100 barrels daily. The oil averages about 42 grav-



**Wichita Cotton Oil Company's Gin Lot 1 is the first completion for the deep zone in the K-M-A field on a location involving less than 10 acres. Rotary was used to Strawn section at 3661 feet, where 7-inch casing was cemented, and when drilled with machine to 3730 feet the well flowed 1930 barrels of oil in 22 hours with tools in the hole. This is the typical method of drilling and completing wells.**

ity, and is in big demand by The Texas Pipe Line Company and Sinclair Refining Company, pipe line division. Continental Pipe Line Company has a line in the district, but is not campaigning for deep well connections. Re-entry of Humble Pipe Line Company and Stanolind Pipe Line Company, who withdrew some years ago, is a possibility when adequate well connections are available.

K-M-A operators are on record with the Texas Railroad Commission as favoring 20-acre spacing, but since no action has been taken by the conservation body, the general practice is to continue the 10-acre spacing plan. Forecasted recovery averages for the field indicate that ultimate profits will be comparatively small for a large area under the 10-acre pattern, as the cost of a completed flowing well is approximately $25,000.

## NORTH TEXAS Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| ARCHER COUNTY— | | |
| O. T. Anderson et al, C. L. Abercrombie 7, sec 157 | 10 | 1020 |
| Benson Bros. et al, fee 1, sec 1397 | * | 1002 |
| L. T. Burns et al, J. Conrady 1, sec 100 | * | 1925 |
| Danson Oil Co., Benson 7-A, sec 1808 | 18 | 944 |
| CLAY COUNTY— | | |
| Bridwell Oil Co., Edrington 2-A | 250 | 1117 |
| Edrington 3-A | 150 | 1115 |
| Edrington 6-A | * | 260 |
| COOKE COUNTY— | | |
| Geo. L. Pace et al, Aldridge 14 | 25 | 1187 |
| A. D. Robinson et al, Dangelmayer 5, blk 17 | * | 885 |
| Trumter Oil Co., Will Sickling 1, blk 15 | * | 1115 |
| Trumter Oil Co. et al, Andress 10-A | 40 | 776 |
| Wallace & Weatherly, J. R. Winstead 2 | * | 1401 |
| JACK COUNTY— | | |
| W. R. Dearing et al, S. M. Jones 2-B | 203 | 3237 |
| B. C. Gilmore et al, G. P. Stewart 5, blk 1 | * | 492 |
| W. H. Hammon et al, Geo. E. Evett 2 | * | 3009 |
| Hanlon & Buchanon, Inc., F. H. Rhodes 4-A | 262 | 2923 |
| Mullendore, Berry & Berry, Clayton 9-B | 404 | 3032 |
| Nelson Oil Synd., J. E. Henderson 1-A | 209 | 2811 |
| MONTAGUE COUNTY— | | |
| Bridwell Oil Co., Salmon 13-A | 30 | 1649 |
| WICHITA COUNTY (K-M-A)— | | |
| Consolidated Oil Co.-Joe Howell et al, W. P. Ferguson 1 | 328 | 3760 |
| Deep Oil Dev. Co., First Nat'l Co. 5, blk 27 | 743 | 3845 |
| Munger Farm Co. 14, blk 25 | 740 | 3835 |
| Melat & Graham (was E. J. Stump) Waggoner Bros 1 | 62 | 4041 |
| Petroleum Producers Co., First Nat'l Co. 82, blk 29 | 651 | 3878 |
| WICHITA COUNTY— | | |
| Howard P. Bunch et al, J. J. Perkins 1, blk 21 | * | 714 |
| Rubsam & Hunter, W. D. McClure 18-A | 10 | 580 |
| WILBARGER COUNTY— | | |
| Lido Oil Co., Waggoner Est. 18-C, sec 51 | 75 | 2698 |
| Phillips, Waggoner Est. 85, sec 46 | 1200 | 3057 |
| WISE COUNTY— | | |
| Latex Oil Co., C. R. Smith 1 | * | 4075 |
| YOUNG COUNTY— | | |
| Frank W. Bennett et al, R. V. Tidwell 3 | * | 3659 |
| Butler et al, C. B. Gant 1, sec 1485 | * | 549 |
| Frank J. Lennon et al, Bell Hawkins 1, sec 1914 | * | 535 |
| Mrs. Lucy Riggs et al, J. M. Kirkland 12, sec 2249 | * | 700 |
| West & Honea, B. N. Honea 5, sec 1492 | * | 922 |
| D. L. Wolfe et al, W. O. Hayter 1, sec 409 | * | 1150 |
| J. G. Wootten et al, S. L. Scott 1, sec 345 | * | 779 |

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS FIELDS

### *Northwestern Yoakum County wildcat logs stain of oil*

**Midland, Texas.**—High structural position and the presence of oil stain in big lime section caused attention to be focused upon a wildcat in northwestern Yoakum County the past week. In the south portion of the county the productive limits of the Wasson field were extended eastward by a flowing producer.

Lou Stogner and E. H. Pipkin's J. A. Blades-Pollard 1, C NE NE Section 103, Block D, J. H. Gibson Survey, provided the encouraging wildcat development when cores at 5204-15 feet carried oil stain followed by less porous lime to 5248 feet. Hard lime was logged at 5248-66 feet. Top of solid lime was logged at 4460 feet, with an elevation of 3851 feet, or 226 feet higher structurally than Elliott Roosevelt et al's Googins 1, located 9 miles to the southeast. The latter was abandoned in sulphur water at 5351 feet, or 1639 feet sub sea. Bahan et al's Henard 1, located 10½ miles south by east of the new prospect, logged top of lime at 4481 feet, with an elevation of 3691 feet, and showed small amount of free oil at 5228-49 feet followed by sulphur water at 5327-28 feet. This oil showing caused a continuation of exploration work on the theory that it may be on the edge of a producing structure.

#### Wasson Going East

Expansion of the Wasson field to the east occurred when Shell Petroleum Corporation's Geo. Baumgart 1, SW Section 828, Block D, flowed 380 barrels of oil in 30 hours after using 4000 gallons of acid at 5000 feet, or 413 feet sub sea. It is 1¼ miles northeast of production. Denver Producing & Refining Company's J. A. Whittenburg 2, C NE NE Section 381, offsetting production, treated lime at 5098 feet or 1475 feet sub sea, with 7500 gallons of acid, then flowed 30 barrels of oil per hour average for 7 hours. Toddie L. Wynne, trustee's W. N. Williard 1, SWc PSL Section 38, Block AX, near the Yoakum-Gaines County line, registered good saturation at 4962-5000 feet, and has cemented pipe for a production test. It is higher structurally than producers to the northwest and southeast.

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J. R. Meeker et al's Wright 1, 4 miles southeast of Lehman, Cochran County, was drilling at 4250 feet in Big Lime topped at 4105 feet, with an elevation of 3774 feet. It is 159 feet higher than the nearest producer in the Duggan area on this marker.

Lease title difficulties on acreage supporting the Ordovician prospect in northern Pecos County held by Magnolia Petroleum Company et al of the McKee tract, H&GN Section 24, Block 9, will prevent a showdown until the fore part of next year on the production possibilities. Top of Simpson was logged at 4775 feet, and operations were halted at 4928 feet early in November. Unusually high structure indicated brands this wildcat as the most promising unexplored Ordovician area in West Texas. Trading is still active in the general area. Mike L. Benedum et al's J. C. Trees 1, southwest corner H&GN Section 9, Block 8, projected 8000-foot test for northwest corner of Pecos County, halted operations at 4991 feet after coring sand at 4862-81 feet, with an elevation of 2528 feet.

J. E. Fitzpatrick, Floyd Dodson et al are starting two tests in western Ward County near the Delaware Lime discovery made last August by Mahres, Slack et al's Pat Wilson 1 at 5100 feet. The discovery was rated at 133 barrels potential, and is dependent upon tank trucks for a market outlet. The new project will be two miles to the south and 1½ miles to the southwest of the producer.

## WEST TEXAS Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| CRANE COUNTY (Sand Hills)— | | |
| Humble, Tubb 15 | 3217 | 4435 |
| CRANE COUNTY (Waddell)— | | |
| Magnolia, Edwards 11 | 197 | 3578 |
| CRANE COUNTY (Jordan)— | | |
| Bond & Harrison, W. E. Connell 1 | 42 | 3667 |
| CRANE COUNTY (McCamey)— | | |
| Texas Co., King 36 | * | 2646 |
| ECTOR COUNTY (Foster)— | | |
| Barnsdall, Foster 4 | 648 | 4270 |
| York & Harper-Sloan-Zook, Foster 4-B | 640 | 4280 |
| ECTOR COUNTY (Goldsmith)— | | |
| Gulf, Goldsmith 58 | 3348 | 4205 |
| Landreth, Scharbauer 7-E | 1711 | 4210 |
| Rogers & Rogers, T. P. Land Trust 2-B | 781 | 4273 |
| ECTOR COUNTY (Harper)— | | |
| Turner et al, Parker 1-A | 570 | 4317 |
| ECTOR COUNTY (North Cowden)— | | |
| Phillips, T. P. Land Trust-Ector 3 | 323 | 4210 |
| Stanolind, J. M. Cowden 63 | 565 | 4249 |
| J. M. Cowden 65 | 564 | 4226 |
| FISHER COUNTY (Rotan)— | | |
| Magnolia, Ella Smith 2 | 231 | 3882 |
| Sunray, Robinson 4 | 608 | 3550 |
| GAINES COUNTY (Wasson)— | | |
| Humble, T. S. R'ley 1 | 265 | 4995 |
| GLASSCOCK COUNTY— | | |
| Continental's Gilbreath 4 | 85 | 2532 |
| HOWARD COUNTY— | | |
| Noble Drlg. Co., Chalk 3 | 981 | 3032 |
| JONES COUNTY— | | |
| Bridwell Oil Co.-Fikes, Jennings 10 | 20 | 2046 |
| Du Pree et al, E. Jackson 4 | 25 | 2008 |
| McKemie et al, Derrick 1 | * | 2502 |
| O. M. Murray-L. C. Harrison, Rial 1 | * | 3335 |
| Owens et al, Gilbreath 4 | 35 | 1990 |
| PECOS COUNTY (Taylor-Link)— | | |
| Shell, University-Bowers 1-G | 108 | 1660 |
| PECOS COUNTY (Wildcat)— | | |
| J. J. Dorr et al, Payton 1 | 39 | 2037 |
| Humble, F. N. Belding-Lunger 1 | * | 2718 |
| H. H. Butz 1 | * | 730 |
| UPTON COUNTY (McCamey)— | | |
| Alf Reece, Jr., et al, Burleson 3 | 968 | 2415 |
| T. P. Coal & Oil Co., Lane 29-A | 643 | 2134 |
| WARD COUNTY— | | |
| Atlantic-Standard, University 8-B | 967 | 2770 |
| Barnsdall, White 1 | * | 2400 |
| Engineers Oil Co., Adcock 1 | * | 2580 |
| Gulf, Estes 52 | 618 | 2630 |
| Hall et al, Patton-Shell 2 | 110 | 2285 |
| Skelly, Martin 5 | * | 3000 |
| Standard (Texas), Adams 9 | 1722 | 2650 |
| WINKLER COUNTY (Emperor)— | | |
| Continental, Cowden 1 | 314 | 2995 |
| Emperor Oil Co., Halley-Woodley 4-B | 1000 | 2905 |
| Stanolind, E. W. Cowden 2 | 524 | 3030 |
| WINKLER COUNTY (Bashara)— | | |
| Texas Co., Campbell 1 | 73 | 3282 |
| WINKLER COUNTY (Kermit)— | | |
| Illinois Oil Co., Abilene Central Bank-Conoco 16-A | 1130 | 3080 |
| Magnolia, Walton 113 | 411 | 3215 |
| Walton 114 | 476 | 3210 |
| Walton 118 | 909 | 2945 |
| T. P. Coal & Oil Co.-E. M. Wahlenmaier, Duval 4 | 1145 | 3070 |
| WINKLER COUNTY (Keystone)— | | |
| Richardson Oils, Walton 1-B | 142 | 3390 |
| Walton-Humble 9-B | 637 | 3460 |
| YOAKUM COUNTY (Wildcat)— | | |
| Skelly-Sun, Kiser 1 | * | 5300 |

*Failures; †Junked; ¶Million cu. ft. gas.

# EAST TEXAS

***High-pressure gas showing in Gregg County test.***

* * *

***Talco proration makes operation finance problem.***

**Tyler.**—Nominal gas showings through formation tester used in the Lower Glen Rose and more recently the Travis Peak by Humble Oil & Refining Company and Gulf Oil Corporation's Robertson 1, deep wildcat for Gregg County on the east flank of the East Texas field, lend encouragement for the development of high-pressure gas from the Lower Trinity. Robertson 1 was coring at 7600 feet in Travis Peak, topped at 7325 feet, and is slated to continue to the Lower Marine. In the event the latter zone is barren of production, seven-inch pipe is due to be cemented and the hole plugged back for gun perforations opposite the gas zones passed up. Completion of a commercial gasser would be an asset for both companies in connection with the operation of their Woodbine holdings in the nearby field at a later date.

**More Lower Marine Drilling**

Lower Marine is the goal of other deep tests for the Woodbine Basin. Stanolind Oil & Gas Company-Ramsey Petroleum Company's Norris 1, Thornton Fault area, drilling at 7095 feet, and Pure Oil Company's Kendrick 16-T, temporarily tied up with a fishing job at 8847 feet, are to test the Lower Marine. Both are in Limestone County. Superior Oil Company of California is negotiating to deepen Paul 1, located on the Quinlan faulted structure, Hunt County, to 9000 feet, having halted last March at 6501 feet. No shows were recorded in the Lower Glen Rose, topped at 5450 feet. Plans are to sell lease spreads at $10 per acre to carry out the deepening project.

**Sulphur Bluff Test Interesting**

Exploration of the Lower Trinity series on the north rim of the Sulphur Bluff field, Hopkins County, is nearing an interesting stage by Walter Goldston et al's Smith 10, which was drilling at 5060 feet. It is contracted to drill to 6600 feet, with the Second Glen Rose as its objective.

Humble Oil & Refining Company's Southern Pine 1-C, Jarvis area, Anderson County, logged top of Travis Peak at 8895 feet, and was drilling at 8950 feet.

In the depleted Camp Hill area, Anderson County, H. L. Parsons et al's Hemby 1, John Gossett Survey, logged top of Woodbine at 5360 feet, with an elevation of 263 feet, and was coring at 5395 feet.

Reduction of Proration allowable of wells in the Talco field, Titus and Franklin counties, effective December 18 from 55 to 46 barrels daily creates a serious financial problem for the smaller operators. These 4300-foot wells require artificial lifts, without exceptions, and the majority of the 605 wells are making a large percentage of water. Lifting and treating cost average close to 35 cents per barrel, and the oil is sold at 73 cents per barrel. Some properties connected to independent pipe line outlets have not marketed their entire allowable for several months.

## TEXAS PANHANDLE Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| CARSON COUNTY— | | |
| Cities Service, M. Sims 3-A | 189 | 3303 |
| Magnolia, fee 3, lse 244 | 149 | 2990 |
| GRAY COUNTY— | | |
| Cities Service, I. B. Hughey 13-B | 555 | 3280 |
| Dyke Oil Co. et al, Meers 3-A | 586 | 3245 |
| G. H. Saunders 4 | 555 | 2968 |
| W. C. Jones et al, A. J. Culler-Shell 8 | 613 | 3293 |
| Standard Dev. Co., Baggerman 1 | * | 3365 |
| Stanolind, W. G. Kinzer 8 | 389 | 3305 |
| Texas Co., J. C. Short 7 | 617 | 3020 |
| HUTCHINSON COUNTY— | | |
| Alma Oil Co., Whittenburg 2-A | 374 | 2715 |
| Cree-Hoover & F. W. Dye, N. Eller 1 | 65 | 2916 |
| J. E. Crosbie, Pitts 20 | 834 | 3015 |
| Phillips, Cockrell 28 | 398 | 3004 |
| Gary-J. A. Whittenburg 3 | 252 | 3250 |
| Wm. Yake 6 | 306 | 2850 |
| Stanolind, H. B. Terry 8 | 434 | 2940 |
| E. E. Watkins 15-A | 392 | 2919 |
| Texas Co., W. B. Herring 2-B | 357 | 3225 |
| Texas Plains Oil Co., E. E. Watkins 5 | 615 | 3029 |
| Texoma Nat'l Gas Co., Deahl 1-E | ¶7.8 | 2959 |
| Tripplehorn Bros., Garner-R.C. Ware 8 | 581 | 3116 |
| MOORE COUNTY— | | |
| Continental, W. E. Bush 1 | ¶35.7 | 3391 |
| Magnolia, C. R. Jones 4 | ¶25 | 3351 |
| Texoma Nat'l Gas Co., J. T. Sneed 13-P | ¶11.3 | 2892 |

*Failures; †Junked; ¶Million cu. ft. gas.

## *Leases in Shelby County require two starts soon*

**Shreveport.**—Two wildcat tests during the coming spring are required in drilling obligations on wildcat blocks assembled last week in East Texas border counties.

In Shelby County, six miles south of Tenaha around the Samuel Strickland Survey, C. F. Green, B. H. Allen and F. R. Halloran, all of Boston, have contracted to take a 6500-acre block with a proviso to spud a 4000-foot test by April 15. In the same county E. D. Davis Oil Company of Oklahoma has secured 1500 acres of Pickering Lumber Company leases from Reddick and Gray, who last summer completed a gas-distillate well in the Paluxy in the William English Survey.

Northwest of Hemphill, Sabine County, around the J. Lacey Survey, N. A. Saye of San Antonio has taken 5000 acres with a drilling obligation to spud by May 15. In the northeast corner of this county Shell Petroleum Corporation is drilling a series of core hole tests.

H. E. Preston and Associates have taken over from Edwards Drilling Company the deepening of Logansport Pipeline Company's Rushing 1, Mannan Smith Survey, southern Panola County. Test is drilling below 3010 feet.

Arkansas Fuel Oil Company has taken approximately 1500 acres recently around a block near Daingerfield, partly in Cass and partly in Morris County, held by W. L. Pilkington. Shell Petroleum Corporation has moved a seismograph unit from near Jefferson, Marion County, to the vicinity of Harleton.

## *Texas permits decline*

The Texas Railroad Commission this week granted 259 permits for drilling new wells in Texas, 203 less than were approved last week.

Operators in the East Texas field reported 29 new locations, including 14 in Rusk, 12 in Gregg, and three in Upshur County. East Central Texas reported 13 locations.

There were 58 permits granted in the West Texas District, including 17 in Ector County, while the West Central Texas District listed only 11 locations.

Operators in the Gulf Coast area were granted 56 permits, including 19 in Brazoria County. Southwest Texas reported 20 new locations.

The North Texas District listed 58 locations, including 28 in Wichita County. Panhandle operators reported 14 new locations.

## *Sarco Creek deep test has Vicksburg possibilities*

**Beeville.**—Continuing to swab mud and oil, R. B. Swiger et al's Wood 1-B, at Sarco Creek in Goliad County, now appears to have possibilities of being a commercial producer in the Vicksburg horizon. The test has been swabbing for several days after perforating at 5009-14 feet and is making about 3 barrels of crude. The pressure is very low, likely accounted for by the fact that several cement jobs were required to cut off the water. These attempts may have sealed much of the formation.

## *Sulphur water eliminates key wildcat on Balcones Fault*

**San Antonio.**—A key wildcat prospect along the Balcones Fault Zone has been eliminated from the immediate major field possibilities through the failure of H. F. Wilcox Oil & Gas Company's Gilliam 2 at Batesville in Zavala County. The well found oil shows in the Edwards limestone at 3975½-77 feet, but bailed four bailers of sulphur water per hour. Deepened to 3983 feet, the sulphur water level rose to 1000 feet. It will be plugged back for tests in upper horizons.

Amerada Petroleum Corporation will

make further tests in Nelms 1, one mile east extension to the Pearsall field, Frio County. The well showed 1,500,000 cubic feet of gas at 3921 feet in the Navarro sand.

## EAST TEXAS Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| JOINER AREA— | | |
| C. A. Everts Drl. Co., Cole 11 (49.37-ac) | 6000 | 3701 |
| Fischer et al, Wilson 4-B (¾-ac) | 3600 | 3763 |
| Humble, Holt 15-C (99.63-ac) | 5500 | 3725 |
| Wooley 35 (201.53-ac) | 7000 | 3654 |
| Wooley 9 (55-ac) | 7500 | 3658 |
| Lake Oil Co., Slaughter-Rankin 6 (5.97-ac) | 600 | 3624 |
| Ohio, Clay 23 (113.56-ac) | 600 | 3645 |
| W. L. & T. L. Sessions, Stone 15 50.9-ac) | 4500 | 3759 |
| Stone 16 (50.9-ac) | 4200 | 3774 |
| Stanolind, Maxwell 31-A (108.52-ac) | 7800 | 3781 |
| Sun, Pace 37-B (637.45-ac) | 2000 | 3687 |
| Burns 11 (109.98-ac) | † | 1103 |
| Ward Oil Corp., Thrash 33 (200-ac) | 4000 | 3794 |
| KILGORE AREA— | | |
| Atlantic, Andrews 6-B (30-ac) | 7600 | 3707 |
| Dyck Oil Co., Crim 3 (14-ac) | 5500 | 3817 |
| East Whaley Oil Co., Elder 4 (86/-100-ac), blk 119 | 2400 | 3562 |
| Gen'l American Oil Co., Douglas-Shell 18 (137.93-ac) | † | 2605 |
| Gulf, Spear 41-B (93.72-ac) | 5500 | 3561 |
| Still 21 (188.38-ac) | 80 | 3546 |
| Watson 18 (92.97-ac) | 9800 | 3579 |
| Hamill & Smith, Kilgore Nat'l Bank 1, blk 120 | 3000 | 3582 |
| Henry Oil Co., Ben Laird 10 (8-ac) | 5000 | 3575 |
| Humble, Laird 30 (156.92-ac) | 7200 | 3669 |
| Laird 31 (156.92-ac) | 8000 | 3626 |
| Laird 32 (156.92-ac) | 8500 | 3595 |
| J. L. James & Co., Lacy 14 (21½-ac) | 4000 | 3566 |
| Magnolia, Moore 20 (152-ac) | 10,500 | 3695 |
| Meco Production Co., Williamson 13 (150-ac) | 300 | 3685 |
| Navarro, Brightwell 30 (113.7-ac) | 7200 | 3638 |
| Green 8 (23.27-ac) | 96 | 3592 |
| Overton Ref. Co., I&GN 19 (19.58-ac) | 1000 | 3669 |
| Rancho Oil Co., Crim 4 (1.3-ac) blk 5 | 3600 | 3576 |
| Stanolind-Tide Water, Walker 6-B (52-ac) | 5000 | 3553 |
| J. B. Salmon Oil Co., Martin 8 (25.6-ac) | 3800 | 3694 |
| Wardlaw et al, King-Crim 3 (blk 117) | 3400 | 3561 |
| Williams et al, Templeton-Jobe 1 (45/100-ac) | 6800 | 3540 |
| LONGVIEW AREA— | | |
| Amerada, Continental Bank 18 (100-ac) | 7500 | 3622 |
| Atlantic, Harris 17 (91.54-ac) | 4500 | 3540 |
| McGeorge 8 (40-ac) | 9000 | 3545 |
| Atlantic-Sun, Barnswell 10-C (53.28-ac) | 8000 | 3542 |
| Ellis Oil Co., Mackey-Humble 22 (147.1-ac) | 750 | 3699 |
| Gen'l American Oil Co., Harris 24 (48½-ac) | 4200 | 3502 |
| Humble, Holland 34 (201.63-ac) | 8000 | 3690 |
| Holland 35 (201.63-ac) | 7800 | 3630 |
| Humack Oil Co., McGrede 9 (39-ac) | 7500 | 3669 |
| Iron Rock Oil Co., Richey 2 (2.38-ac) | 8500 | 3540 |
| L. G. & S. Oil Corp., McQueen 4-C (97-ac) | 300 | 3585 |
| Magnolia, Davis 15 (66.42-ac) | 8600 | 3596 |
| Nicholson et al, fee 5 (460-ac) | 240 | 3728 |
| P. F. Rutledge-C. W. Boller, Todd 13 (155-ac) | 225 | 3741 |
| Shell, King 27 (160-ac) | 9200 | 3599 |
| Stanolind, Snoddy 10 (50.98-ac) | 5500 | 3627 |
| Walker 6-A (35.33-ac) | 4000 | 3579 |
| Stanolind-Falcon, Cloud 6 (36.24-ac) | 3600 | 3627 |
| Sun, Hargrove 21 (199.3-ac) | 1200 | 3674 |
| Mackey 6 (44.76-ac) | 500 | 3641 |
| Superior, Ingram 26 (163.84-ac) | 10,200 | 3570 |
| FRANKLIN COUNTY (Talco)— | | |
| Gray & Wolfe, Bolin 1-B (12.7-ac) | 213 | 4309 |
| Humble, Wims 2-B (79-ac) | 58 | 4294 |
| HENDERSON COUNTY (Cayuga)— | | |
| S. B. Howard Pet. Co., Barton 4 (160-ac) | 2000 | 4049 |
| TITUS COUNTY (Talco)— | | |
| Humble, Wilson 2 (6.85-ac) | 478 | 4316 |
| Wilson 3 (40-ac) | 263 | 4300 |
| Magnolia-Humble, Blackburn 3 (80.51-ac) | 448 | 4280 |

*Failures; †Junked; ¶Million cu. ft. gas.

# *Big Play Likely for Western Nueces County*

By EARL S. POST, Staff Writer

A DEVELOPMENT program, which may rival Saxet in magnitude, is in prospect for Western Nueces County. Uncovering of a series of local highs on one general structural feature has placed thousands of acres of potential producing area within the region subject to exploration.

This district's possibilities first came to light in 1928 with the discovery of the Agua Dulce field. Subsequent work has disclosed other fields along the trend, each of which has resulted in multiple sand producers. Now, with several producing structures well defined, much of the work is being directed to search of sands in the Vicksburg zone at depths ranging below 7000 feet.

Just how important this territory will be depends in a large part on the success of operators in finding lower gravity crudes with lower gas/oil ratios. Should sands of this type be uncovered, a drilling boom is inevitable; otherwise, work likely will be limited to drilling on larger spacing and revised operation methods. The latter would include the construction of natural gasoline plant units to handle the rich gasses popped into the air while the oil is being produced.

In any event, the territory continues to be a hot spot of wildcatting activity. Eight discoveries of new sands or new pools were made during the first ten months of 1937 in this immediate district and another well was attempting to complete at this writing. If it is successful, it will uncover another producing area. These sands have not been sufficiently explored since their opening to definitely determine their value.

The Western Portion of Nueces County is definitely divided into two districts, one being the Bentonville sector and the other Agua Dulce-Stratton area several miles down dip. The Agua Dulce-Stratton district, some 10 miles long, northeast to southwest, is a three-pool area producing gas and oil from Catahoula-Frio sands ranging from 2000 to 6800 feet. Bentonville is limited to a single field, mainly gas, producing in the same formations from 3600 to 5600 feet.

All sands thus far drilled in the South Agua Dulce field have been in the Frio, no tests being carried deep enough to test possible Vicksburg zones, likely below 7100 feet. Sand lenses in the Frio, likewise, are expected to be developed on various portions of the South Agua Dulce structure.

Agua Dulce, proper, has had a program this year which is possibly more important than the South pool in that several tests were carried to unusual depths in the section. One went below 9000 feet, nearly 2000 feet into the Vicksburg, while others were carried as far as 8500 feet. The true importance of this development, carried on mainly by Union Producing Company, is that for the first time thick sand bodies in the Vicksburg zone have given promise of oil production.

Probably the most important sand discovery in the Frio section was Heep Oil Corporation's Ollie Purl 1, completed October 28, 1937, flowing 57 barrels of 49 plus gravity crude from a new sand section at 6298-6339 feet. This oil is lower gravity than others in the field and is rather black. The test had drilled to 6812 feet and was completed through perforations at 6335 feet. When first completed, it showed pressures of 850 pounds on tubing and 950 pounds on casing, flowing through 3/16-inch choke. The flow and pressures quickly declined, but when reperforated, the well came back stronger, flowing 87 barrels of crude per day through the same size choke.

Activities on the Stratton structure have been successful.

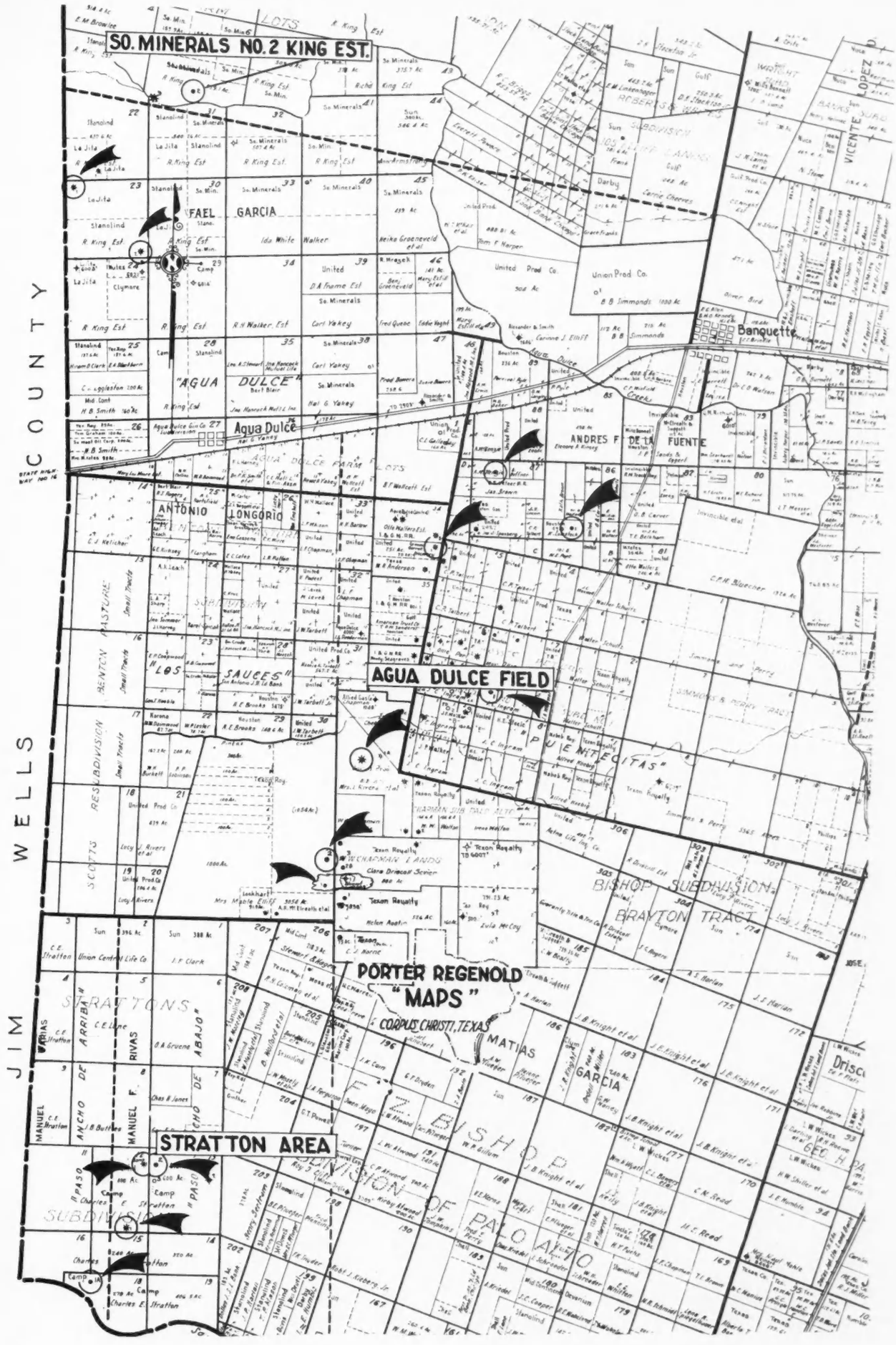
Out of five wells drilled on this block, two by Stanolind Oil & Gas Company and three by John F. Camp Production Company, five distillate and crude producing horizons have been discovered. Other sands, not yet tested, showed sufficiently on laboratory analysis to indicate producers.

The three pools, Agua Dulce, South Agua Dulce and Stratton, are largely controlled in each case by Union Producing Company, Texon Royalty Company, and John F. Camp Production Company. The Agua Dulce area is the most broken from a lease standpoint, and it is likely that this area will receive a most active drilling campaign in the close future. Offsetting through a few small ownerships, coupled with a broken lease situation, would make this a rather hot area.

South Clara Driscoll is much different, several very large ownerships of lands and single leases materially reduce the need for such an aggressive program. Stratton is a further controlled situation, one ownership being under a single lease.

The latter two fields, will be highly profitable even if they prove to be mainly distillate and gas producers. Wide spacing of wells, elimination of an offsetting program, conservative development, etc., will blend in carrying these areas to a successful conclusion. Likewise, unit control, effected through the single ownership, will enable the construction of natural gasoline plants by producers or under contract. Their operation will be most economical, gas being recycled in some cases to further benefit the leases upon which the development is underway.

Several gasoline plants now operating in the Agua Dulce field are turning their gas to the pipe line systems. Parker, Foran and Knode's project, however, is stripping gas from the regular 4900-foot zone under pressure and returning it to the formation with a single stage of compression. The unit is connected to a single well and may result in an innovation for high gas/oil ratio field developments along the Gulf Coast.


SO. MINERALS NO. 2 KING EST.
JIM WELLS COUNTY
"AGUA DULCE"
Agua Dulce
AGUA DULCE FIELD
ANTONIO LONGORIA
LOS SAUCES
ANDRES F. DE LA FUENTE
Banquette
PORTER REGENOLD "MAPS"
CORPUS CHRISTI, TEXAS
STRATTON AREA
STRATTONS ARRIBA
STRATTONS ABAJO
BISHOP SUBDIVISION
BRAYTON TRACT
BISHOP DIVISION OF PALOMA
PUENTECITAS
GARCIA
MATIAS
SCOTTS RESUBDIVISION
BENTEN PASTURE
CHAPMAN LANDS
Texon Royalty
Texas Royalty

# SOUTHWEST TEXAS

***Search for deeper sands in proven fields successful.***

* * *

***Well now testing may present Luby with fourth sand.***

* * *

***Camp completes 8600-foot extension for Stratton.***

**Corpus Christi.**—New and deeper South Texas Gulf Coast reserves are being established through operations on proven structures. This work is proving successful with prolific production being established by these wells.

### To Test at 7792 Feet

Drilling to 8010 feet, Union Producing Company is to attempt completion of Phil Power 9, in Refugio townsite, Refugio County. The well is in a gas and gasoline sand at 7789-92 feet, which will be tested first. Other sands with oil and distillate shows were logged at 7703-9 feet, 7376-87 feet, 7438-40 feet, and in the regular horizons above 7100 feet. Success of this well will lead to further flank drilling in this area in an attempt to open lenses in older producing areas.

Already this year three sands between 6500 and 7100 feet have been opened at Refugio. Interesting is the fact that much of the development has followed the retesting of leases abandoned in upper levels due to depletion.

### One for Luby

Richardson Petroleum Corporation's J. O. Chapman 1, SW N Section 43, potential discovery well of a new sand and a mile north extension to Luby area, Nueces County, had perforated casing set on bottom at 5424 feet and test was being made of sand logged 5409-24 feet. This well, if successful, will uncover the fourth commercial horizon in the field, others being at 4000, 4300 and 5000 feet.

Camp Production Company is proving up a rather valuable reserve in the Stratton field, Nueces County. C. P. Wardner, Trustee, 3, Section 13, flowed at the rate of five barrels of 54.4 gravity distillate per hour through ¼-inch choke under pressures of 2250 pounds on tubing and 2500 pounds on casing from sand 6405-17 feet. The well is 8600 feet northeast of Wardner 1-A, completed some time ago in the same horizon. Three sands have been placed on oil production in this field, the 6400 and 4700 foot horizons apparently blanketing the entire structure.

Reports were not so encouraging from another important wildcat. Pat Rutherford and Tide Water Associated Oil Company's George 1, three miles west of Taft in San Patricio County, has been abandoned at 7430 feet.

Magnolia Petroleum Company et al are moving in for a second test in the new East Premont field, Jim Wells County. The test is to be 1271 feet north of the discovery well of the field.

## *Outpost showing indicates extension for Alta Mesa*

**Mission.**—Further expansion of Alta Mesa properties of Standard Oil Company of Texas in Brooks County is evident. Mestina Oil & Gas Company 3 (Lease 2) on the north prospect, is waiting on cement after a string of 7-inch was set at 2743 feet. A drill stem test at 2717-27 feet developed 160 pounds pressure and 70 feet of mud in 8 minutes. Another test at 2719-27 feet developed 100 feet of fluid, half oil and mud and half oil cut salt water in 15 minutes. It showed a pressure of 30 pounds. The test likely will test lower sands after casing plugs have been drilled out.

The same company's Mestina 10 pumped 50 barrels of fluid, 23 percent cut, on a 16-hour gauge after perforations were made at 2597-2613 feet. It is a new sand for the pool.

Over in Hidalgo County, Atlantic Refining Company's American Rio Grande Land and Irrigation Company 1, 2½ miles southwest of Weslaco and in Section 175, is below 9000 feet and coring. La Sal Viejo Oil Company's Garcia 1, seven miles northwest of Raymondville and in Kenedy County, is progressing at 8750 feet.

Another one mile extension, this time to the northwest, was provided in the La Blanca field, Hidalgo County, when Gulf States Oil Company's Delta Orchards 2, Lot 3, Section 94, came in for about five barrels of distillate per hour through 3/8-inch choke after casing was perforated at 7880-88 feet with 12 shots. The test is in sand at 7885-7905 feet, with casing set on bottom 7960 feet. Pressures were reported at 2725 pounds on tubing and 2950 pounds on casing.

J. L. Collins Company's Guerra 1, on La Reforma prospect in Starr County, but near the Hidalgo County line, was going ahead below 6380 feet, having passed through a salt water sand at 6271-6310 feet. Its attempts to complete above in the Frio netted only salt water.

## *Mirando district's comeback speeded by developments*

**Laredo.**—Mirando district's comeback as a leading South Texas development district was further speeded with more wildcats extending present fields, opening new producing zones and opening additional producing levels.

North Sweden, Duval County, saw the Pettus, or upper Cockfield, extended to embrace practically the entire present producing structure. Benedum and Trees' F. Vaello Puig 9, twin well to Puip 3, cored hard sand 5365-66

## SOUTH TEXAS Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| **SAN ANTONIO DISTRICT** | | |
| CALDWELL COUNTY— | | |
| Ellmag, Geary 1 (Luling) | 35 | 2181 |
| Lanning & Coffield, Withers 2 (ne Luling) (pb/td 2225 ft) | 50 | 2251 |
| Millican & Norman, Talbert 5 (Luling) | 65 | 2093 |
| GUADALUPE COUNTY— | | |
| Morris Kallison, Howell 1, Ira Nash survey | * | 3275 |
| Kramer, Anderson 1-A (Dart Creek) (pb/td 2286 ft) | 75 | 2648 |
| **LAREDO DISTRICT** | | |
| DUVAL COUNTY— | | |
| Cox & Hamon, Cuellar 3 (Hoffman) (pb/td 2714 ft, perf 2700-7) | 100 | 2843 |
| Humble, Moyer 1 (N. Sweden) | 350 | 5393 |
| Magnolia, Labbe 12 (Labbe) | ¶13 & 15 | 2851 |
| Navarro, West 1 (N. Sweden) | 475 | 5339 |
| Russ, Farias 11 (N. Sweden) | 550 | 4817 |
| JIM HOGG COUNTY— | | |
| Barnett, Lonez-Martinez 1-A | * | 2407 |
| McMULLEN COUNTY— | | |
| Argo, Edrington 1-A (Rhode) | ¶10 | 1773 |
| STARR COUNTY— | | |
| Calderoni-James-Follette, Rodriguez 2, porcion 80 | * | 1489 |
| WEBB COUNTY— | | |
| Anderson & Stieren, Martin 3 (Oilton) | 200 | 1903 |
| French, Perez 8 (Killam) | 45 | 2003 |
| Killam, Garcia-Villareal 3 (Kil'am) | 90 | 1987 |
| Kirkwood & Morgan, Garcia & Villareal 1, survey 720 | ¶2 | 2005 |
| Lewis, Garza 1, section 48 | * | 2673 |
| **COASTAL AREA** | | |
| ARANSAS COUNTY— | | |
| Atlantic, Porterfield 8-B (McCampbell) | 750 | 7270 |
| BROOKS COUNTY— | | |
| Standard of Texas, Mestina 10-lease 1, R. G Salinas survey, (perf 2597-2613 ft.) | 50 | 3100 |
| CALHOUN COUNTY— | | |
| Normandie, Cook 8 (Heyser) | 500 | 5745 |
| COLORADO COUNTY— | | |
| Garvey, Dubak 1, M. L. Lapham survey | * | 6509 |
| KARNES COUNTY— | | |
| Howard, Moczygemba 1, E. Seguin survey | * | 2515 |
| Luling, Boyce 15 (S. Burnell) | 725 | 3673 |
| LIVE OAK COUNTY— | | |
| Valerio, Evans 2 (Ezzell) | 220 | 1405 |
| NUECES COUNTY— | | |
| Camp, Wardner 3 (Stratton) | 125 | 6417 |
| Hilburn, Cox & Cryer 1 (Saxet) | 350 | 4183 |
| Houston, Hunter 5 (Saxet) | 400 | 4868 |
| Morgan 32 (Saxet) | 325 | 4862 |
| Humble & Barnsdall, Bonham & Haas 1 (Flour Bluff) | 500 | 6655 |
| Miller 6-A (Flour Bluff) | 500 | 6652 |
| Roberdeau 6 (Flour Bluff) | 600 | 6663 |
| Morgan & Greta, Morgan-Clark 8 (Saxet) | * | 1105 |
| Seaboard, Shaffer 3 (Luby) | 300 | 5070 |
| Southern Minerals, King 3, King Farm Lots | ¶20 | 4015 |
| Page 4 (Saxet) | 625 | 4875 |
| REFUGIO COUNTY— | | |
| Hewitt & Dougherty, Lambert 62 (Tomoconnor-Greta) | 650 | 5878 |
| Quintana, O'Connor 23-C (Tomoconnor) | 1350 | 5925 |
| South. F. W. V. Heard 14 (Refugio) | 425 | 4921 |
| SAN PATRICIO COUNTY— | | |
| Graham, Dunn 1 (McCampbell) | 675 | 7142 |
| Humble, Mayo 31 (Taft) | 650 | 4366 |
| Plymouth, Welder 89-C (Plymouth) | 500 | 5652 |
| Welder 90-C (Plymouth) | 500 | 5745 |
| Welder 91-C (Plymouth) | 500 | 5645 |
| VICTORIA COUNTY— | | |
| Sun, Schneider 3 (Placedo) | 250 | 4767 |

*Failures; †Junked; ¶Million cu. ft. gas.

feet, then sandy shale and sand to 5372 feet, which carried excellent oil odor. A first drill stem test failed.

The well is on the extreme eastern side of the main field and is one mile east of the nearest producer in the same horizon. It proves a sand area more than two miles wide from the extreme west side of the structure to the new test. The production covers a similar distance north to south.

Despite the outcome of the Puig 9, its showing is considered sufficient to assure production between it and the other wells in the same sand.

### Jackson to Be Developed

It now appears as though the 3900-foot sand at the top of the Jackson formation, logged and tested by the majority of the wells in the North Sweden field, finally will be developed. Circle Oil Company's Merle West 1-A, Section 18, was perforated at 3864-75 feet and 3884-95 feet, each with 12 shots, and made a gasser.

Oil production was proved on one Cole sand prospect and another was uncovered during the week. After logging sand at 1806-28 feet, casing was set on bottom in Darby Petroleum Company's Holbein 2-B, Section 7, Las Animas field in Jim Hogg County. The pipe was perforated with 3 shots in the bottom 1½ feet, filling 1000 feet with fluid in 30 minutes. Of this amount, 800 feet was oil and remainder salt water. The perforations were squeezed and new ones were being made higher.

Howard Nessly's A. M. Bruni 3, NE Section 449, south of the Cole field in Webb County, cored sand at 1790-1813 feet, carrying a good oil odor, but showing considerable gas pressure on two drill stem tests. The well is waiting on orders and may deepen rather than complete as a gas well. It will open a new field.

O. W. Killam was merging the Killam and Oilton fields, Webb County, with J. O. Hill 1, in Block 6, Section 1005. The well cored the Mirando sand at 1921 feet, and after taking in several feet of formation was attempting completion.

## TEXAS GULF COAST Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| AMELIA— | | |
| Humble, Pinchback D-2 | 600 | 6779 |
| ANAHUAC— | | |
| Humble, Johnson 20-S | 672 | 7090 |
| Tyrell 20 | 614 | 7110 |
| Zappe 13-S | 658 | 7085 |
| CALL— | | |
| Houston Oil, Sabine Tram 2 | * | 7380 |
| DICKINSON— | | |
| Pure, Otterside 1 | 450 | 8062 |
| HARDIN— | | |
| Humble, Chambers 1 | 7672 | 7591 |
| HANKAMER— | | |
| Gulf, Boyt 28 | 100 | 2675 |
| HASTINGS— | | |
| Stanolind, Brown 8 | 544 | 6128 |
| Cannon 6 | 585 | 5885 |
| Cannon 7 | 538 | 6092 |
| Drake 15 | 510 | 5645 |
| Guido 6 | 522 | 5515 |
| SEGNO— | | |
| Gulf, Wing 2 | 240 | 5194 |
| TOMBALL | | |
| Humble, Rock 1 | 164 | 5558 |
| TURTLE BAY— | | |
| Stanolind, Brown 1 | 590 | 6750 |
| WEST COLUMBIA— | | |
| Texas Co., Abrams 18 | 560 | 5670 |
| Goldman 1 | 580 | 5505 |
| Phillips 5 | 317 | 5660 |

*Failures; †Junked; ¶Million cu. ft. gas.

# TEXAS GULF COAST

***Fourteenth drill stem test successful at McFaddin.***

* * *

***Tool slips as Cheek wildcat attempts test of sand.***

* * *

***New sand found 1500 feet southeast of Pickett Ridge.***

**Houston.**—After making 14 drill stem tests, the last of which was successful at 5913-29 feet, Shell Petroleum Corporation set 9⅝-inch casing in McFaddin 1, McFaddin Ranch prospect, S. A. Pace Survey, Jefferson County, at 5913 feet. A production test the coming week will open a new oil field in the Gulf Coast.

McFaddin 1 was drilled to 5929 feet in sand showing oil. Twelve hundred feet of pipe line oil, 40 feet of brackish water, and a 2400-pound pressure were shown on the last drill stem test. The oil was 33.4 corrected gravity. The 5913-foot drill stem test was the best showing recorded on the well to date. The only other sand in the wildcat which has shown evidence of commercial oil was from 5389 to 5408 feet, where 450 feet of oil were recovered.

Another well in Jefferson County also attracting attention is Glenn H. McCarthy's Broussard Trust 1, Cheek area, C. Hillbrandt Survey. Last week a drill stem test was attempted at 7328 feet and the testing tool slipped. However, the well showed 330 feet of oil and salt water with a good showing of gas. At the end of the week the wildcat was down to 7435 feet in shale. Broussard Trust 1 will probably open a new oil field in the 7328-foot sand. It is running high on structure as compared to other wells drilled in the district.

### Gas and Distillate Show

In the Aldine area, Harris County, Texas Gulf Producing Company's J. W. Rath 1, M. Sevey Survey, made a drill stem test at 7346 to 7362 feet through quarter-inch chokes in 10 minutes and showed a 500-pound pressure and 430 feet of gas and distillate-cut mud after the testing tool slipped. Rath 1 cored gas and distillate sands at 7353 to 7362 feet.

Three miles southwest of the first oil producer at Seabreeze, Chambers Count, Sun Oil Company's Broussard Hebert 2, T. & N. O. Survey, Section 127, was making 17 barrels of oil daily and a large volume of gas through quarter-inch chokes from Frio sands at 8490 feet. Sun will probably squeeze cement through perforations to shut off some of the gas.

### Cores New Sand

Approximately 1500 feet southeast of production at Picket Ridge field (Kubela), Wharton County, Great Plains Oil Company has cored a new sand in Bishkins Myers 1, I. & G. N. Survey, Section 24. The hole was down to 4640 feet. At 4580 feet a sand showing oil was encountered and a drill stem test was tried, but the testing tool slipped. Fifty feet of oily mud and a 350-pound pressure were recorded.

At Katy, Waller County, Stanolind Oil & Gas Company was preparing to test Security Trust 1, H. & T. C. Section 99. The hole is bottomed at 7542 feet and seven-inch casing was set at 7526 feet. Gas sand from 7409 to 7460 feet will be tested.

South of production at Palacios, Matagorda County, Sun Oil Company made a 55-minute drill stem test on Bayshore Farms 1 at 9715 to 9750 feet and only recovered 12 thribbles of mud. This well was drilled to 11,327 feet before it was plugged back.

### Jet Satisfactory

After being jetted, Stanolind Oil & Gas Company's Oates 1, Clinton area, Reels and Trobough Survey, Harris County, showed 132 barrels of pipe line oil at 3835 feet. The operators intended to install pumping equipment, but the well showed so well through the bottom hole flow valves that it was decided to continue to jet it.

Another failure was reported in the Call area, Newton County, last week. Houston Oil Company's Sabine Tram 2, 2000 feet southwest of the discovery well, H. & T. C. Section 37, was drilled to 7380 feet before it was plugged. Sand showing oil was logged in this extension well at 7105 to 7123 feet and seven-inch casing was set at 7105 feet. On a production test the well flowed pipe line oil for three hours through quarter-inch chokes and showed a tubing pressure of 100 pounds and a casing pressure of 625 pounds. Sabine Tram 2 finally went to gas and then salt water. It was drilled deeper.

In Tyler County, Navarro Oil Company and C. B. Bunte made an interesting wildcat location. Rice 1 is 330 feet north and 175 feet west of SEc E½ NE Section 11 in the B. B. B. & C. Survey.

Hardin field, Liberty County, continues to be one of the more active fields in the Texas Gulf Coast. Last week Humble Oil & Refining Company completed Chambers 1, its first well and on the south flank of the field, flowing 28 barrels of pipe line oil per hour through a quarter-inch choke at 7591 feet. Strake Petroleum Company's Finley 3 recovered 1100 feet of salt water on a drill stem test and 200 pounds pressure at 7561 feet. This southeast flank test later set a cement retainer at 7526 feet. Woodley Petroleum Corporation has cored oil sand in McMurtry 5, H. B. Johnston Survey. Top of the sand was encountered at 7558 feet.

# SOUTH LOUISIANA

***Bateman Bay may become deepest field in district.***

* * *

***Wildcat on Timbalier Bay to make production test.***

**Lake Charles.**—The Texas Company's State Bateman Lake 1, St. Mary Parish, indicated last week that it would open the deepest producing field in the Gulf Coast. A production test was being made after setting screen and liner. State Bateman Lake 1, perforated with 12 shots from 10,900 to 10,905 feet, showed 28 stands of pipe line oil and seven stands of gas and water on a 30-minute drill stem test through quarter-inch chokes.

During the past week, State Bateman Lake 1 was perforated with 33 shots and a 50-minute drill stem test was made from 10,915 to 10,926 feet. It showed 7566 feet of salt water. The perforations were squeezed with cement.

The Texas Company's deep well at Horseshoe Bayou, is producing from 10,890 feet. Horseshoe Bayou also is in St. Mary Parish.

Gulf Oil Corporation is making a drill stem test on State PP 3 at Timbalier Bay, Lafourche Parish. Last week casing was perforated with six holes from 7008 to 7010 feet to shut off a possible salt water flow. After a drill stem test is made screen and liner will be run for a production test. Some time ago the wildcat indicated it would open a new oil field when two drill stem tests showed commercial oil.

Another wildcat for Lafourche Parish which has indicated it would open a new oil field is Amerada Petroleum Corporation and Louisiana Land & Exploration Company's South Coast Corporation 1. A string of seven-inch casing is being set at 10,314 feet. Next week sands cored from 10,185 to 10,222 feet will be tested. If these sands are not productive, a sand at 7238 feet will be tested.

North of production at Lake Long, Lafourche Parish, Fohs Oil Company and Pilgrim Exploration Company logged about 34 feet of gas sand in State 3 at 10,083 to 10,117 feet. This is a new sand for the field. At the end of the week the test was coring shale at 10,233 feet.

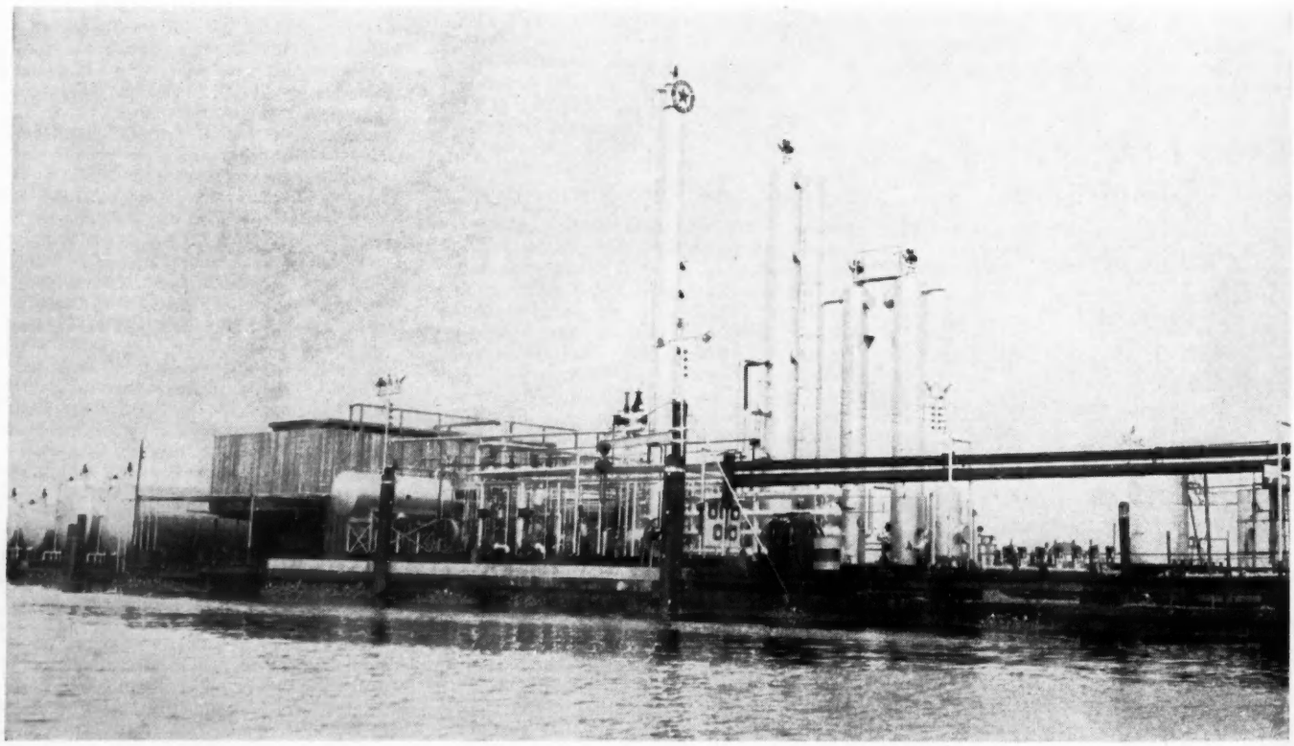
West of production at Bayou Des Allemands, St. Charles Parish, Amerada Petroleum Corporation and Louisiana Land & Exploration Company's St. Charles Land Company 1 logged salt at 9255 feet and was shut down at 9263 feet in salt. This is the second well in the area to encounter salt.

Union Sulphur Company's Calcasieu National Bank 1, Woodlawn area, Jefferson Davis Parish, appeared disappointing last week when salt water was shown after casing was perforated with 40 holes from 8292 to 8295 feet. Cement was squeezed through the perforations in hopes of shutting off the water.

Northwest of Starks, Calcasieu Parish, D & D Oil Company's Lutcher Moore 2 again showed salt water and gas cut mud. Last week a test made after casing had been perforated with 50 holes from 7160 to 7205 feet showed 14 stands of salt water and gas-cut mud on an hour drill stem test through quarter-inch chokes.

In a new sand at Big Lake, Cameron Parish, Union Sulphur Company's J. O. Hebert 2 showed salt water. The hole was drilled to 9189 feet, where seven-inch casing was set. It was perforated with 18 holes from 8442 to 8444 feet and showed salt water. Cement retainer was set at 8439 feet and sands at 8435 to 8438 feet were being tested at the close of the week.

A new producing horizon was found at Lake Pelto field, Terrebonne Parish, by The Texas Company. State Lake Pelto 13 was completed at 6505 to 6542 feet after casing was perforated. The well came in making 910 barrels of 37 gravity pipe line oil daily through a ⅜-inch choke, with a tubing pressure of 670 pounds. State Lake Pelto 13 was drilled to 6605 feet, where it tried to blow out, and the drill pipe became stuck. The hole was plugged back and redrilled to 6555 feet, where seven-inch casing was set.



**A gasoline plant is built on piling at Lafitte and from this plant comes about 5000 gallons of gasoline daily. The dry gas is sold to operating companies at Lake Washington**

# NORTH LOUISIANA

***Jefferson "divorce" increases work in area.***

* * *

***Sharp increase in drilling at Lisbon looms.***

* * *

***Lincoln Parish wildcat showing production.***

**Shreveport.**—H. B. Turner and Associates last week were preparing to drill plugs and test Scuddy 1, J. Hanks Survey, Marion County, Texas, midway between the Jefferson producing district and the Lodi nose of Rodessa. Total depth is 6028 feet. This test is reported to have logged 33 feet of Gloyd formation with a good oil saturation, topped at 5993 feet. The Henderson sand logged at 5972 feet carried gas.

In the same survey, Gulf Oil Corporation made location for C. W. Ray A-1, located 466 feet from east line and 385 feet from north line of a 40-acre tract.

Since the declaration of the Texas Railroad Commission that Jefferson and Rodessa will be "divorced" there has been an increase in number of applications for drilling permits for the Jefferson area. Nine permits there were authorized last week. A hearing will be held at Jefferson January 15 to set an allowable for Jefferson. Unless this is increased the new designation will not mean anything.

Total cumulative production in the Rodessa field to December 1 was 52,876,748 barrels of which the Louisiana side produced 36,718,317 barrels; the Texas side, 15,248,927 barrels; and Arkansas, 909,504 barrels.

The latest salt water table compiled for Rodessa shows 194 wells making varying amounts of salt water of which 141 were on the Louisiana side, 51 on the Texas side, and 2 on the Arkansas side, both of the latter showing less than 1 percent.

### Three to Re-Test

Three wells on the Arkansas side of Rodessa last week were arranging to re-test following unsuccessful completion efforts. W. C. Feazel's Farmer 1, Section 13-20-28, swabbed dry at 6098 feet and was perforating at 6013-6022 feet. Roger Lacey's Grogan 2, Section 15-20-28, was arranging to acidize after testing dry at 6042 feet and W. L. McClanahan's Capps B-2, Section 12-20-28, was arranging to perforate after testing dry at 6081 feet.

Lacey's Sartor 1, Section 15-20-28, flowed 61 barrels the first hour through 1-inch choke, from 6040 feet.

On the Louisiana side of the field Gulf Oil Corporation's Allison 1, Section 3-23n-16w, was completed at 6024 feet flowing 7 barrels hourly through 21/64-inch tubing choke. Shell Petroleum Corporation's U. S. Government 1, Section 9-23n-16w, which made 168 barrels in 24 hours through ⅜-inch choke was later treated with acid. Freeman W. Burford is also arranging to acidize Terry 2, Section 2-23n-16w. Total depth is 6048 feet.

In the Lodi nose of Marion County, Arkansas Fuel Oil Company completed Wade Houston 2, A. de los Santos Coy Survey, which made 547 barrels in 24-hour gauge on ¼-inch choke with gas/oil ratio of 453 to 1. Total depth is 6094 feet.

Gulf Oil Corporation's Kemper 1, R. Bennington Survey, made 400 barrels in 18 hours through ⅜- and ½-inch chokes and the same company's recently completed Grubach 1, A. de los Santos Coy Survey, made 503 barrels in 24 hours through ⅜-inch choke with gas/oil ratio of 536 to 1.

### Lisbon Extending

A 2-location extension to the south in the Lisbon field appeared assured last week when Sloan & Zook's H. W. Patton Estate 5, Section 1-20n-5w, logged 12 feet of saturation and cemented 5½-inch casing. Total depth is 5371 feet.

Eighteen tests are now drilling in Lisbon and a sharp increase in drilling is expected immediately after the new year begins, as the market outlet situation has begun to be clarified.

### Lincoln Wildcat Showing

E. T. Oakes, H. D. Easton and Associates were arranging to set 5½-inch casing on bottom at 6260 feet in Griggs

## SOUTH LOUISIANA Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| JENNINGS— | | |
| Superior, Leckelt 7 | 300 | 7202 |
| LAKE PELTO— | | |
| Texas Co., State 13 | 909 | 6542 |
| POTASH— | | |
| Humble, Orleans Levee Board 23. | * | 1172 |
| VALENTINE— | | |
| Pan American, Harange 14 | 240 | 5500 |
| ST. MARTIN PARISH— | | |
| Texas Co., St. Martin Land Co. 10, Henderson area, 15-8s-7e | * | 9145 |

*Failures; †Junked; ¶Million cu. ft. gas.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SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe
Cotton Valley—Greggton
Houston

1, C SW 36-18n-1w, Lincoln Parish wildcat, that last week showed 9 feet of sand that electrical logging device indicated had excellent resistivity and fair porosity in basal Glen Rose lime from 5932 to 5941 feet; elevation is 199 feet. Casing will be set on bottom and perforated at the 5932-41 foot level, which corresponds to the producing horizon at Lisbon and Sligo. Top of Travis Peak in Griggs 1 was 5975 feet. Bottom of the hole is in hard brown shale.

Joe Modisett and Associates' Frost Lumber Company 1, NE SW 14-21n-1e, Union Parish wildcat, was drilling black shale at 6916 feet in lower Marine last week.

A major leasing play has developed in Union Parish along the southeast Schuler "trend." Tide Water Associated Oil Company has for several weeks been the most active buyer in this parish having secured over 3500 acres in Townships 22 and 23 north, Ranges 1 and 2 west. Arkansas Fuel Oil Company, Lion Oil Refining Company and others have increased their holdings also in the last few weeks.

C. H. Murphy and Associates of El Dorado, Arkansas, have taken a 5500-acre block in this parish, located in Township 22 north, Ranges 1 and 2 east, from J. D. Landers. West of this block and around Section 16-22n-1e, R. W. Williams and F. L. Perkins have taken several tracts. The Hunter Company leased approximately 600 acres in Township 20 north, Range 1 east.

In Jackson Parish, Sun Oil Company has secured 240 acres in E. T. Oakes and Associates' block on which Griggs 1 is located, Sun Oil Company having taken acreage in Sections 24 and 25-18n-1w, and Section 13-17n-1w. In the same parish, Tide Water Associated Oil Company took a few leases in Township 19 north, Range 3 west.

From this activity all of which is in the North Louisiana basin it would not be unlikely that the major part of the early program of activity for North Louisiana in 1938 would be in that general area.

### Cotton Valley Production

Cumulative production of distillate from the lower Marine horizon below 8000 feet at Cotton Valley to December 3, is placed at 658,079 barrels for the 21 of the field's 27 producers, owned by 4 companies.

The companies and their cumulative totals to that date are: Magnolia Petroleum Company, 5 wells combined daily average production, 1,064 barrels, cumulative total, 198,457 barrels.

Ohio Oil Company (discoverer of lower Marine in field), 11 wells, combined daily average production, 1,457 barrels, cumulative production, 356,538 barrels.

Standard Oil Company of Louisiana, 3 wells, all comparatively recent completions, combined daily average, 295 barrels, cumulative production, 20,641 barrels.

Union Producing Company (United), 2 wells (1 off production), daily average for the other, 217 barrels, cumulative production, 82,443 barrels.

The estimated daily average production per well for the 21 wells, is 132 barrels. The figures do not include the recently completed extension well of A. G. Oliphant, his Sam Banks 1, nor 3 wells of Woodley Petroleum Company, which from pipe line data for November had average runs of 114 and 116 and 87 barrels respectively.

Cumulative production from Ohio Oil Company's R. L. Holloway 6, Section 23-21n-10w, lone Travis Peak producer in the field, is 235,379 barrels. It averaged 480 barrels daily for November.

Leasing and royalty buying around the flanks of Cotton Valley still maintain a brisk pace. Stanolind Oil & Gas Company is reported to have taken over a 6500-acre block around Section 34-22n-10w, on which M. H. Marr and the late D. L. Perkins drilled a dry hole in Section 35-22-10, to 6084 feet, just below the Travis Peak. However, lower Marine developments being so widespread at Cotton Valley have made deeper possibilities appear in this block.

### More Leasing

Standard Oil Company of Louisiana, Magnolia Petroleum Company, Lion Oil Refining Company and F. F. Meadows are among large recent purchasers of leases around Shongaloo, Webster Parish, where Magnolia Petroleum Company's Sexton 1, Section 32-23n-9w, is now drilling below 2350 feet.

J. V. Harris has acquired 2000 acres of leases west and northwest of production at Lisbon, Claiborne Parish, around Sections 29 to 34-21n-5w, and Sections 3 and 4-20n-5w. Shell Petroleum Corporation is taking scattered leases on the west flank of the old Homer field, Claiborne Parish.

Continental Oil Company which recently made location for a test in Section 3-15n-11e, Madison Parish, on a 10,000-acre lease taken after it had done geophysical work on an 85,000-acre block on which it took an option from Singer Manufacturing Company, has had shooting crews working in Tensas Parish where highs have been reported found near Section 8-13n-12e, and 31-13n-12e.

Union Producing Company has leased 1200 acres in Township 19 north, Range 10 east, West Carroll Parish, along Bayou Macon near the town of Epps.

## *Ouachita County wildcat has Permian objective*

**El Dorado, Ark.**—Benedum & Trees Oil Company made location last week for a proposed Permian lime wildcat test in Ouachita County, on a block of approximately 5000 acres. The new test is Mitchell 1, SE SW SE 4-14-19. In the same area, A. H. Tarver of Shreveport, made location for Dean 1, SW SE 16-14-19.

The Permian lime this year has been found productive in the Schuler field, Union County, and at Buckner, Columbia County. In the Buckner district Clarence Taubel has leased several hundred acres in upper Township 16, Range 22, and lower part of Township 15, Range 22. Across the Lafayette County line and north of the town of Stamps, Stanolind Oil & Gas Company leased several hundred acres in Sections 30, 31 and 32-16-23. In the same county along the Louisiana line, Magnolia Petroleum Company is leasing around Section 6-20-24. In Township 19, Range 23, Lafayette County, Phillips Petroleum Company, Magnolia Petroleum Company, Lion Oil Refining Company, Hunt Oil Company and Skelly Oil Company are among those acquiring leases following assembly of a block of 3000 acres by Standard Oil Company of Louisiana around Section 11-19-23, near Taylor. Standard Oil Company has been filling in acreage in its block around Section 15-17-19, Columbia County, but whether Tide Water Associated Oil Company and Seaboard Oil Corporation's recently junked 7500-foot hole in that area will cause postponement of drilling thereon is not known. A test once had been reported planned on this block by Standard Oil Company early in 1938.

### Two at Schuler

Two new producers were completed last week in the Lower Marine horizon (Jones sand) in the Schuler field, Union County. Edwin M. Jones' Marine Oil Company 4, SE SW SE 17-18-17, was completed at 7610 feet, perforated 7-inch casing cemented at 7604 feet, and tested sand logged at 7526 to 7566 feet; elevation is 220 feet. Gauge had not been made Wednesday.

Lion Oil Refining Company's Marine 1, NE SE SW 17-18-17, was flowing 105 barrels per hour after 7-inch casing cemented at 7640 feet, 5 feet off bottom, was perforated with 280 shots from 7528 to 7564 feet; elevation is 218 feet.

Status of other tests at Schuler are: Lion Oil Refining Company's Justiss NE NW NE 19-18-17, top of Jones sand 7530 feet, elevation 226 feet, waiting on final casing string; Marine Oil Company's M. Justiss 2, SWc Lot 7, NW 18-18-17, arranging to perforate casing set at 7610 feet, total depth 7614 feet; Phillips Petroleum Company's Jennings 1, coring 7551 feet; Justiss 2, drilling shale and lime 5850 feet; and Alice Sidney Oil Company's Morgan 3, drilling 6000 feet.

Lion staked two new locations, Morgan B-5, SEc E½ SE 18-18-17, and Marine 2, SWc E½ SE 17-18-17.

Gauges during the week on previously completed deep tests at Schuler are: Alice Sidney Oil Company's D. S. Morgan 2, 589 barrels through 15/64-inch tubing choke with tubing pressure 930 pounds and casing pressure, 2010 pounds, basic sediment, .4 percent. Edwin M. Jones' Marine 1 and 2, flowing into same tank, for 13 hours, and 18 hours, respectively, 1567 barrels, with 1 percent wash water. Marine 1, the first deep producer in the field that had shown considerable salt water had plugged back to 7529 feet from old total depth of 7616 feet and drilled out to 7608 feet, later being perforated with 59 shots from 7595 to 7606 feet.

Lion's Morgan A-1, Section 18-18-17, gas-distillate well in the Permian lime made 658 barrels of dark distillate and 25 million feet of gas in 24 hours with tubing pressure 2500 pounds and casing pressure, 2525. Phillips' Ed Gan 1, made 521 barrels of oil through 40/64-inch tubing choke in 24 hours.

Four drilling permits were authorized last week by the Arkansas Board of Conservation, as follows: Franklin County—Ozark Natural Gas Company, J. H. McDonald 2,290 feet from north line and 650 feet east of west line NE SE 13-8n-29w; Miller County—Skelly Oil Company, W. M. Thomas 2990 feet south and 664 feet east NWc NE SW 12-20-28; Ouachita County—Benedum and Trees Oil Company, Mitchell 1,330 north and west SEc SW SE 4-14-19; A. H. Tarver, Dean 1990 north and 330 east SWc SE 16-14-19.

## SOUTHEASTERN STATES

### *Hinds County test abandoned on Mississippi salt dome*

**Jackson, Miss.**—Southern Natural Gas Company's Angelo Williams 1, NE NW 35-6n-1w, Hinds County wildcat near Edwards that logged top of salt on a dome at 3085 feet, was abandoned last week at 4346 feet. Elevation was 182.7 feet. Whether the company plans to drill another test down the flank in an effort to find production and get away from the dome has not been announced. The test was started as a 7000-foot project. S. P. Borden of Shreveport was the drilling contractor.

Sun Oil Company and Associates' Mrs. Kate Talley 4, located 1350 feet east and 2200 feet south NWc 33-4n-15w, on the flank of a salt dome found early this year in Section 28-4n-15w, Lamar County, was drilling at 7302 feet in black shale last week without having run into salt. Joe Modisett of Shreveport is drilling contractor.

Modisett and Associates' McCorvey 1, SE SW SW 20-9n-2w, Choctaw County, Alabama, on the Hatchetigbee Anticline, recently abandoned at 7520 feet, may be deepened. Companies owning spreads in the 30,000 acre block are conferring with Modisett in this proposed deepening.

Following seismograph work, Adams Oil & Gas Company and Kirby Petroleum Company are taking leases in Grenada County, north Mississippi, and already have over 7000 acres.

#### Considerable Shooting

Shell Petroleum Corporation, which has a gravimeter unit working in Lamar County, Mississippi, also has a similar party working in Forest and Perry counties. It also has a gravimeter unit working near Montgomery, Alabama. Sun Oil Company and The California Company have geophysical parties working in Lincoln County. Phillips Petroleum Company has a torsion balance unit working in southern Lamar County, near Lumberton. The California Company ordered a party that recently completed work in Stone, Harrison and Jackson counties to return to Pike County. Union Producing Company has a reflection unit in George County, and Sun Oil Company has a torsion balance crew in Jeff Davis County.

## NEW MEXICO

### *Arrange storage for drilling program in Vacuum pool.*

* * *

### *Eunice mile outpost shows for flowing production.*

**Hobbs, New Mexico.**—A crude storage program has been worked out by operators in the Vacuum pool, Lea County's most promising lime area, for a drilling campaign during the coming year, until oil stocks and production justify the extension of a line into the area. Magnolia Petroleum Company has completed an 80,000-barrel tank which will serve the company's three wells, and one held by The Texas Company. Additional tanks may be erected before pipe line connection is provided. Texas-New Mexico Pipe Line Company will extend a line north from its pump station in the Lynch area when conditions justify the expenditure.

More competitive drilling for this area is assured. Phillips Petroleum Company became the fourth active unit in staking location for State-Hale 1, C NE SE 35-17s-34e, and was drilling at 260 feet. Completion of a producer will result in the drilling of progressive offsets.

Skelly Oil Company's State 1-J, C NE NW 31-17s-35e, east outpost, cemented 7-inch at 4202 feet in lime. First lime stringer was logged at 3803 feet, with an elevation of 3987 feet.

The Texas Company's State 1-M, offsetting production on the south end, was drilling at 3430 feet, and Magnolia Petroleum Company's State-Bridges 3 was in anhydrite at 3125 feet.

The Texas Company has made location for M. A. Corbin 1, C SW NW 10-18s-33e, a wildcat project about 6 miles southeast of production in the Maljamar pool and 8½ miles west by south of Vacuum. In eastern Lea County, Eastland Oil Company et al's Waldrop-Shell 1, C SE SE 1-20s-38e, was drilling in lime and shale at 4386 feet.

### NEW MEXICO Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| EDDY COUNTY— | | |
| Emperor Oil Co., Puckett 3, c ne nw 24-17s-31e | 115 | 3920 |
| F. W. & Y. Oil Co., Gissler 6-A, c n½ ne ne 23-17s-30e | 200 | 3470 |
| Nash & Windfohr, Jackson 5-A, near sw sw ne 13-17s-30e | 570 | 3511 |
| Jackson 7-A, c sw se 13-17s-30e | 720 | 3510 |
| LEA COUNTY (Eunice)— | | |
| Continental et al, Reed 2-B-24, c ne sw 24-20s-36e | 500 | 3859 |
| Gulf, S. E. Felton 1, c se se 28-21s-36e | 840 | 3885 |
| LEA COUNTY (Hardy)— | | |
| Repollo, H. S. Turner 1, se se sw 29-21s-37e | 283 | 3800 |
| LEA COUNTY (Mattix)— | | |
| Stanolind, C. Myers 3-A, c sw se 22-24s-37e | 625 | 3580 |
| LEA COUNTY (Monument)— | | |
| Texas Co., American Nat'l Ins. Co. 1, c ne nw 18-19s-37e | 1500 | 4040 |
| LEA COUNTY (Penrose)— | | |
| Landreth Prod. Corp., L. E. Grizzell 2, c se ne 8-22s-37e | 521 | 3710 |

*Failures; †Junked; ¶Million cu. ft. gas.

#### Wildcat Shows Producer

Gulf Oil Corporation's Lamunyon 1, C NE NE 28-23s-37e, wildcat between the Skelly and Mattix fields, logged sufficient saturation in the sandy lime section in coring to 3651 feet to indicate a potential producer, and has cemented pipe at 3524 feet. It originally was drilled to 539 feet in March 1934, to comply with permit, then shut down to await developments.

In the Skelly area, Samedan Oil Corporation's Hughes 5, C NE SW 10-23s-37e, is a new project offsetting production.

#### Eunice Outpost Flows

Preliminary production test given Cities Service Oil Company's Closson 1-A, C NE NE 18-22s-36e, one mile south and west of nearest production in the lower end of the Eunice field, points to a natural flowing well. Formation tester used at 3733-48 feet, with an elevation of 3588 feet yielded a steady flow of oil. Pipe has been cemented at 3717 feet. New tests for the north end of the field includes Phillips Petroleum Company's State-New 1, C E½ NE NE 26-20s-36e, and Stanolind Oil & Gas Company's Gilluly 13-A, C SE NW 24-20s-36e.

The Texas Company's American National 1, C NE NW 18-19s-37e, widened the upper portion of the Monument field with an initial flow of 361 barrels oil in 10 hours through ¾-inch choke after using acid in lime at 3920-4040 feet. It is bottomed at 325 feet sub sea. Continental Oil Company's State 1-A, offset to the northernmost producer, flowed 70 barrels of fluid, 5 percent BS&W, on gas lift after repeated acid and nitro shots at 4046 feet, or 330 feet below sea level. The latter has made location for Sanderson 4-S-10, NE SE SE 10-20s-36e, southwest edge of the Monument field.

Operations are underway on Warren L. Todd, Trustee's Leonard 1, C SE NW 29-26s-38e, wildcat project for southeastern Lea County announced last October on a 2560-acre federal permit. Gulf Oil Corporation has rigged up Elliott 2, C NE SE 15-25s-37e, and Stebbins 2, C SW NW 5-22s-37e, located in the Langlie and Penrose fields, respectively.

***Colorado wildcat shows 50 barrels an hour on test.***

* * *

***Wilson Creek strike may cause 400 new starts.***

**Casper, Wyo.**—Testing 50 barrels of high gravity crude per hour on the drill stem from the Morrison formation at 6700 feet, the joint wildcat of The Texas Company and the California Company on Wilson Creek structure, 30 miles southwest of Craig, Colorado, railhead, appears as the most important strike for the Rocky Mountain division in 1937.

Like the Mountain Fuel Supply Company's discovery at Powder Wash a year ago in northwestern Colorado, the Wilson Creek test comes late in the year, a Christmas present. The Powder Wash discovery, also in northwestern Colorado, furnished the most important Rocky Mountain strike in 1936, stimulating wildcatting activity in northwestern Colorado, where 7 tests are underway. This figure should be considerably boosted by the Wilson Creek strike.

### Coring for Sundance

The joint test, Freeman-Government 1, CSE NW 35-3n-94w, had the flow through the drill stem December 20, and is coring in open hole for the Sundance formation just below the Morrison. The Sundance provided the reservoir for two of the Rocky Mountain division's most important oil strikes in recent years. In 1935 deep Sundance production was developed in the Big Medicine Bow fields and the Lance Creek fields in Wyoming.

If the well is brought into completion for commercial production as indicated by the drill stem test, it will open the largest known structure in Colorado for development. The Wilson Creek structure, with 800 feet of closure is a triangular shaped dome embracing 15,000 acres within its lowest closing contour. Well spacing of one to a 40-acre tract would mean the drilling of 375 to 400 wells to producing formations.

Acreage on the structure is controlled by the California and The Texas companies. In 1920, the former's Richmond Petroleum Company drilled Arizona 2 OPC-1, SW NE SE 27-3n-94w, to 4826 feet without going through the Mancos shale. Again in 1928 The Texas Company drilled on the Freeman permit in NW SE 27-3n-94w, and had a slight show of oil followed by a hole full of water in the Dakota at 5818-5915 feet.

### May Build Refinery

The California Company the past year entered the Rocky Mountain division in the marketing department, and has established retail outlets throughout Colorado, Wyoming, Montana, the Dakotas, and Nebraska. There has been considerable talk that the California Company would establish a refinery in the Rocky Mountain district, depending on development of crude oil reserves. The company controls Quealy Dome light oil field in Wyoming, and half interest in the Big Medicine Bow field, Carbon County, Wyo. Possibility now exists, in view of the Wilson Creek discovery, that The California Company will erect a Rocky Mountain refinery. Possible sites are at Craig or Denver, Colorado, or some southern Wyoming town along the Union Pacific, Cheyenne, Laramie or Rawlins.

The Texas Company has a 1000-barrel skimming plant at Craig, refineries at La Barge and Casper, Wyoming. Craig is a division point on the Denver & Rio Grande railroad and shipping point for crude oil east to Denver and other points and west to refineries in Salt Lake City.

### To Complete as Gasser

Continental Oil Company's Leach 1, SW NE NE 29-36n-64w, East Lance Creek unit block, Niobrara County, Wyoming, which failed in the deep Minnelusa and Sundance sands and backed up from 6434 feet, tested 5,000,000 cubic feet of gas daily from the Dakota sand at 3900 feet, and is preparing to complete for a gasser.

An extension, one location to the south along the west side of the Lance Creek field, Mackinnie Oil & Drilling Company's Thompson 2, NE NE NW 7-35n-65w, cored 7 feet saturated Minnelusa sand with total depth at 5278 feet and is waiting on cement to set around the 7-inch production casing at 5269 feet on top of the sand.

J. M. Huber Corporation's Midwest 2, NE SE SW 27-36n-65w, recently extended the field 1½ miles north when it was completed for 450 barrels daily of pipe line oil from the Minnelusa at 5470 feet.

After encountering steep dips at 765 feet in Union Pacific 2, CSW SW SE 17-21n-80w, deep test of the Simpson Ridge gas field, Ohio Oil Company is plugging back to 765 feet where it will set a whipstock in an effort to drill the sub-surface on structure.

## MOUNTAIN STATES
## Completions

### MONTANA

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| GLACIER COUNTY (Cut Bank Field)— | | |
| Hole Bros., No. 3 Allotted 124, se sw se 1-32n-6w | 35 | 3040 |
| ROOSEVELT COUNTY (Poplar Dome Structure)— | | |
| Poplar Dome Syndicate, Fry 1, nw nw ne 21-28n-50e | * | 1532 |

### WYOMING

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| BIG HORN COUNTY (Byron Field)— | | |
| Ohio Oil Co., Adam Pryde 1, csw se 25-56n-97w | 30 | 5670 |
| NIOBRARA COUNTY (Lance Creek Field)— | | |
| Ohio Oil Co., Converse Sheep Co. 1, se sw 35-36n-65w | 1000 | 4452 |
| Leo OPC-7 1, nwc nw se 35-36n-65w | 14 | 5264 |

*Failures; †Junked; ¶Million cu. ft. gas.

***Test three miles southeast of Bentley will acidize***

**Mt. Pleasant, Mich.**—Now swabbing from 15 to 28 barrels daily from Dundee lime at 3527 feet, McClanahan Oil Company will acidize the Connoly et al 1, Section 35-17n-2e, Bentley Townsite, Gladwin County. The test is nearly three miles southeast of the discovery well drilled three months ago in Bentley Township. The discovery well is seven miles southeast of edge producing wells in the Buckeye field.

McClanahan's Connoly logged Dundee at 3388 fet, with the first important pay zone 90 feet in the lime. It is four feet lower on structure than the discovery, but more than 60 feet higher than a recently completed test two miles west and a half mile north.

If acid reacts favorably to establish the McClanahan test as definitely commercial as a 3500 foot test, a major play may shape up in the district. Major companies hold spreads through the area.

Heavy snow fall, coupled with icy roads considerably slowed development over the state this week.

## MICHIGAN
## Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| CLARE COUNTY— | | |
| McClanahan Oil Co., Mortinsion 1, c sw 9-19n-5w | * | 1665 |
| GLADWIN COUNTY— | | |
| Fortney Oil Co., Smart 1, ne nw ne 29-17n-2e | 35 | 3531 |
| Sun Oil Co., Rabb 13, nw se ne 10-18n-1w | 800 | 3658 |
| Rabb 14, sw sw ne 10-18n-1w | 900 | 3656 |
| Socony Vacuum's Dalley 6, se sw ne 12-18n-1w | 180 | 3625 |
| Elzie Beaver's Woodring 4, sw se se 23-18n-1w | 400 | 3590 |
| Prout Petroleum Co., State 1, sw ne ne 36-18n-1w | 100 | 3604 |
| Cryden & Rowmor, Shaffer 2, nw se sw 12-18n-1w | 76 | 3629 |
| Mammoth Pro. & Ref., State C4, sw se se 10-18n-1w | 140 | 3635 |
| J. V. Wicklund Dev., Kimble 1, sw ne sw 16-18n-1e | 20 | 3624 |
| TUSCOLA COUNTY— | | |
| Brehm & Jenicke's Boyce 1, se nw sw 24-14n-7e | 15 | 2821 |

*Failures; †Junked; ¶Million cu. ft. gas.

# CALIFORNIA FIELDS

***New drilling at Montebello hinges on whipping water.***

* * *

***Gauge on Grapevine test pends lower gas/oil ratio.***

* * *

***Santa Maria Valley outpost to cause more drilling.***

**Los Angeles.**—Interest in California during the past week was divided between the finding of a new producing deep zone on the western edge of the old Montobello field in Los Angeles County, the testing of a new well in the Grapevine area of Kern County which showed lots of gas and some oil, and the completion of a good edge well in the Santa Maria Valley field in Kern County. A well producing better than 2500 barrels in the northwest extension of the Long Beach field was also of unusual interest.

The testing of St. Helens Petroleum Company's Monterey 20 at Montebello, located near the intersection of Montebello Boulevard and Lincoln Avenue, indicated a good well with bottom at 6353 feet, although it is making a lot of water, probably from around the shoe. In this hole, 8⅝-inch casing was cemented at 6221 feet. The test showed good for around 3000 barrels, but the water content was 78 percent. The oil tested 36 gravity. Efforts are now being made to shut off the water.

The new deep test is located on a large lease offset by Standard Oil Company of California and Union Oil Company to the west. It is doubtful if the producing zone will extend far to the east, since several deep failures have been drilled in that area. The production is thought to be coming from upper Miocene, and if the well can be placed on production with clean oil, several other deep wells will be drilled.

## CALIFORNIA

### Completions

| Company, Well and Location | Init. Prod. Bbls. | Depth |
|---|---|---|
| FRUITVALE— | | |
| Western Gulf, Red Ribbon 5 | 225 | 3725 |
| KERN FRONT— | | |
| Ted Martin, No. 2 | 100 | 2917 |
| LOST HILLS— | | |
| Tide Water Associated, No. 9-C | 125 | 1533 |
| MIDWAY SUNSET— | | |
| Texas Co., Midway 29 | 150 | 3015 |
| MOUNTAIN VIEW— | | |
| Hogan Pet. Co., Porter-Day 9 | 250 | 6069 |
| ARVIN— | | |
| General, Houchin 1 | 110 | 7928 |
| SANTA MARIA VALLEY— | | |
| E. H. Moore's Union Sugar 3 | 200 | 5313 |
| Union, Vicente 1 | 470 | 4818 |
| VENTURA COUNTY— | | |
| So. Calif. Dr. Co., Daily 1 | * | 3086 |
| SAN DIEGO COUNTY— | | |
| Itasca Pet. Co. No. 1 | * | 1570 |
| KERN COUNTY— | | |
| Texas Co., Theta 11-9 | * | 2048 |
| EL SEGUNDO— | | |
| Richfield, McCary 1 | 1050 | 7235 |
| Standard, Refinery 6 | 1795 | 7215 |
| LONG BEACH— | | |
| Richfield, Denni 11 | 25 | 2960 |
| NORTHWEST LONG BEACH— | | |
| Union, Oil Operators 2 | 860 | 4105 |
| WILMINGTON— | | |
| General, Terminal 9 | 80 | 3105 |
| Royalty Service Co., No. K-1 | 350 | 3644 |

*Failures; †Junked; ¶Million cu. ft. gas.

### Grapevine Wildcat Shows

In the Grapevine area of Kern County, Universal Consolidated Oil Company's Tejon 1, Section 33-11-19, depth 4464 feet, flowed 15,000,000 cubic feet of gas plus a spray of oil, but devoid of water. On the second day, it was flowing 14 barrels of oil an hour and 2,000,000 cubic feet of gas, with 800 pounds on the tubing and 1100 pounds on the casing. A few hours later the gas output increased to 2,500,000 cubic feet and pressures increased to 1150 pounds on the tubing and 1200 pounds on the casing. Until a proper gas/oil ratio can be established, the production of oil will be an unknown quantity.

The well is 660 feet south and 660 feet west of Reserve Oil & Gas Company's No. 33-3, a gasser which has been making considerable gas for several months, but recently began making some oil in a spray. Petrol Corporation is preparing to start a new well in this general area, and California authorities are now claiming a new discovery in the Grapevine area, and it is understood the new field will be called Grapevine.

### Santa Maria Outpost Good

Frank Jones' Gallison 1, 330 feet south and 330 feet west from NEc SE SW Section 26-10n-34w, an outpost of the Santa Maria Valley field, with bottom at 5197 feet, plugged to 5090 feet, is good for about 1000 barrels of 16 gravity clean oil. This test had been watched with considerable interest, since it indicates that this part of the field has not been defined. Completion of this well means further drilling in the general area.

There has been some disappointment at the action of Union Oil Company's Bell 100 at Santa Fe Springs, with bottom at 11,314 feet. Liner was run to 11,215 feet, and after several days of swabbing, the hole refused to flow. After swabbing down to 8500 feet, and being allowed to stand for three hours, fluid rose to 8000 feet, which is considered to be equivalent to 100 barrels a day production. The oil is 28 gravity and clean. What the next step will be has not been decided.

### Long Beach Extension Flows

In the northwest extension of Long Beach, Union Oil Company's Oil Operators 2, bottomed at 4105 feet, started out on the pump for 400 barrels a day. On the second day on the pump, production increased to 870 barrels of 23.8 gravity clean oil. Late on the third day it started flowing at a rate of about 2500 barrels, but soon sanded up. After being killed and cleaned out, it again flowed at a rate of 70 barrels an hour. This is Union's third well for the extension, and it is now indicated other wells will be drilled in the same area. Several dry holes have been drilled in the past between this new productive area and the main Long Beach field, so there is a divided opinion as to whether it is a new field or an extension. General opinion is that it should be called an extension.

Union Oil Company extended Santa Maria Valley field two miles west with the completion of its Le Roy 2, north of Betteravia. It started out pumping 218 barrels of 17.5 gravity clean oil.

## *Gasoline manufacturers meet in Tulsa May 11*

The Natural Gasoline Association of America will hold its seventeenth annual convention at Tulsa May 11, 12 and 13, according to announcement by J. A. LaFortune, Warren Petroleum Corporation, and president of the association. The meeting will end the same day the International Petroleum Exposition opens.

James W. Vaiden, director of natural gasoline operations for Skelly Oil Company and chairman of the program committee, has announced one entire day will likely be given over to a discussion of vapor-lock. The association, in co-operation with the Western Petroleum Refiners Association, conducted extensive road tests on the subject last summer.

Associated with Vaiden in planning affairs of the convention are R. C. Alden, Phillips Petroleum Company, Bartlesville; W. A. Baden, Warren Petroleum Corporation; T. R. Goebel, Shell Petroleum Corporation and P. M. Raigorodsky, Glen Rose Gasoline Company, all of Tulsa; R. E. Beckley, Standard Gasoline Company, San Francisco, and J. R. Jarvis, Lone Star Gas Company, Dallas.

## *Natural gas accountants organize association*

**Tulsa.**—The Natural Gas Accountants Association, a new organization for Oklahoma members of that profession, has been formed at Tulsa. Twenty-six men were present at the organization meeting. Following are officers of the association: Oakah L. Jones, Oklahoma Natural Gas Company, chairman; Ray K. Osborn, State Fuel Supply Company, Oklahoma City, vice chairman; Joseph A. Staples, Jr., Oklahoma Utilities Company, Bristow, secretary-treasurer.

A paper entitled "Meter Reading, Bill Delivering and Collection Practices," was read by John Kohlstad.

## ARKANSAS

CLARK COUNTY—M. M. Martin's C. L. Cabe 1, nw nw 14-10-20, dr 2800 ft.

CRITTENDEN COUNTY — Manning & Martin's Cartright 1, se nw sw 16-7n-8e, dr 2740 ft.

DREW COUNTY—Sloan, Wells et al's Hardy 1, sec nw 3-14-7, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sdtr td 2944 ft.

MILLER COUNTY—F. F. Earles' General American 1, se se sw 20-14-26, rur. Hearell & Burnett's Willie Wallace 1, se nw se 7-20-27, lcn.

OUACHITA COUNTY—Benedum & Trees' Mitchell 1, se sw se 4-14-19, rur. A. H. Tarver et al's Dean 1, sw se 16-14-19, mim. O. F. Whittaker's C. C. Guttry 2, se nw 21-15-19, arr make test td 2180 ft.

## ALABAMA

GREENE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, sd 115 ft.

HOUSTON COUNTY—Rice O&G Co.'s Oakley Est. 2, se nw sw 9-3n-29e, arr set 7-in csg td 4975 ft Tuscaloosa.

MOBILE COUNTY—Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, lcn. J. C. Prine's King 2, ne ne 4-1n-4w, elev 135 ft, 10-in csg 300 ft, arr deepen 1100 ft (1100 ft s of No. 1).

## CALIFORNIA

### FRESNO COUNTY

JACALITOS CREEK—Dauphin Dev. Co.'s Boone 1, 20-21-14, dr shale 3368 ft.

PANOCHE—J. A. Gautier's Hubbard 1, 12-14-11, td 510 ft, rigging heavier equip.

JACALITOS HILLS—Jacalitos Pet. Co.'s Associated 1, 14-21-15, dr shale 5609 ft.

GUIJARRAL HILLS—Petroleum Securities Co.'s Gatchell 2, 18-20-16, lcn.

HURON—Pure's S. P. 1, 31-18-17, dr shale 9290 ft.

CIERVO—Superior's No. 1, 20-16-13, rur.

TRANQUILITY—Union's Nicholson 1, 17-15-15, dr shale 1628 ft.

CANTUA CREEK—Western Gulf Oil Co.'s S. P. L. 4, 3-17-15, rig.

### KERN COUNTY

DEVIL'S DEN—Amerada's Beer 5, 22-26-19, dr brown shale 5434 ft. Little Major Oil Co.'s Jester 1, 36-25-18, lcn.

LERDO—Arkelo Pet. Co.'s Arkelo 41, 23-28-26, sd 10,056 ft.

CUYAMA VALLEY—Calif. Prod. Co.'s Job 1, 6-10-24, dr 625 ft.

FRUITVALE—Calif. Prod. Co.'s K. C. L. 1, 14-29-27, rur. Pacific O & G Dev. Co.'s Fannuchi 1, 14-29-27, rig.

BELRIDGE—Chico-Martinez Oil Co's Exeter 1, 1-29-20, lcn. General's St. Helens 1, 12-28-20, r 5175 ft. Ohio's Ford 1, 6-29-22, dr shale 1610 ft.

WASCO—Continental's K. C. L. A-2, 8-27-24, td 11,584 ft, redr to 11,479 ft, fsh. Seaboard Oil-Tide Water Associated's Continental-K. C. L. C-1, sd 10,213 ft.

ROSEDALE—Continental's K. C. L. B-1, 12-29-26, td 10,205 ft, redr at 8610 ft; K. C. L. D-1, 10-30-26, lcn.

ARVIN—General's Houchin 1, 27-31-29, td 7928 ft, see completions.

McVAN—Golden Bear Oil Co.'s No. 1, 10-27-27, lcn. No. American Oil Cons. Co.'s No. 1, 26-27-27, bldg rig.

GRAPEVINE—Honolulu Oil Corp.'s S. P. 33-1, 33-12-19, dr shale 4820 ft. Ohio's T. R. C. D-2, 23-11-19, dr sand and shale 4835 ft. Petrol Corp's No. 1, 32-11-19, lcn. Universal Cons. Oil Co.'s Tejon 1, 33-11-19, td 4448 ft, set 8⅝ in at 4435 ft, started flowing 15,000,000 ft gas and some oil, pressures built up and was choked back to keep sand from coming in.

CALIENTE CREEK—Geo. W. Johnson's No. 1, 33-29-30, dr sand 200 ft.

McKITTRICK—Par-Mer Oil Co.'s Par-Mer 1, 6-31-22, dr shale 2100 ft. Rocima Oil Co.'s No. 1, 20-30-22, dr shale 530 ft.

ROUND MOUNTAIN—Richfield's Olcese 1, 17-28-29, lcn. Shell's Olcese-Lilly 2, 21-28-29, lcn.

MOUNTAIN VIEW—Section Six Oil Co.'s Johnston 1, 6-31-29, dr gray sand 7375 ft.

### ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

| | |
|---|---|
| *—*dry hole abandoned well.* | owdd—*old well drilling deeper* |
| ‡—*salt water (completions).* | owpb—*old well plugging back.* |
| †—*junked and abandoned.* | pb—*plugged back or plugging back.* |
| ¶—*million feet of gas.* | r—*reaming.* |
| abd—*abondoned.* | rog—*rig on the ground.* |
| bbls—*barrels.* | rur—*rigging up rotary tools.* |
| br—*building rig.* | rust—*rigging up standard tools.* |
| b.s.—*basic sediment.* | sd—*shut down.* |
| csg—*casing.* | sdtr—*sidetracking.* |
| co—*cleaning out.* | sg—*show gas.* |
| dd—*drilling deeper.* | si—*shut in.* |
| dk—*derrick.* | so—*show oil.* |
| dr—*drilling.* | so&g—*show oil and gas.* |
| fsg—*fishing.* | spd—*spudding.* |
| ft—*feet.* | sr—*straight reaming.* |
| hfw—*hole full of water.* | sw—*salt water.* |
| in—*inches.* | td—*total depth.* |
| lcn—*location.* | ur—*underreaming.* |
| m—*milling.* | wih—*water in the hole.* |
| mim—*moving in materials.* | wo—*workover.* |
| mit—*moving in tools.* | wocs—*waiting on cement to set.* |
| mot—*milling on tools.* | wosr—*waiting on standard rig.* |
| n, s, e, w—*north, south, east, west.* | |
| oih—*oil in hole.* | |

McFARLAND—Shell's Keystone 1, 4-26-27, lcn.

STRAND—Shell's K. C. L. A-72, 14-30-25, dr shale 6760 ft.

SAN EMIDIO—Shell's No. 4-26, 26-11-22, dr sandy shale 1627 ft.

TEN SECTION AREA—Standard's K. C. L. 15-1, 27-30-26, dr shale 8070 ft.

SEMITROPIC—Standard's Randolph Com. 2, 14-27-23, td 8037 ft in shale, straightening hole.

McGUNDEN—Standard's Routzong 1, 2-30-28, dr shale and gray sand 5788 ft.

GREELEY AREA—Superior's K. C. L. 9, 3-30-26, td 7870 ft, perforated to test.

SO. MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, dr shale 5664 ft.

KERN FRONT—Vernon & Wheedon's No. 1, 28-28-27, rur.

### MISCELLANEOUS

GLENN COUNTY—Ohio's Willard 1, 18-20-2, dr shale and sand 3060 ft.

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft, plug 5737 ft, 814,000 ft gas.

KINGS COUNTY—Pyramid Prod. Co.'s Retherford 1, 28-24-18, dr 1540 ft, oil sand 1422 to 1424 ft.

MERCED COUNTY—Amerada's Carano 1, 19-10-11, td 6870 ft, running formation tester.

SAN JOAQUIN COUNTY—Standard's Weil-Zuckerman 2, 25-2-4, dr shale and gray sand 6950 ft.

SAN MATEO COUNTY—Bergman Oil Co.'s No. 1, 10-6-5, lcn. Wilshire's Cowell 1, 20-6-5 (Half Moon Bay), dr shale 5510 ft.

SOLANO COUNTY—Tracy Dr. Co.'s Hanson 2, 36-4-2, dr shale 3875 ft.

TULARE COUNTY—Magnet Oil Co.'s A. O. G. 3, 29-24-24, sd 7555 ft. Standard's Morris 1, dr shale 10,940 ft. Si Wicker's No. 1, 1-24-27, lcn.

MONTEREY COUNTY—Amil A. Anderson's Hillman 1, 15-24-14, dr shale 2935 ft.

SAN LUIS OBISPO COUNTY—Ajax Pet. Co.'s No. 1, 27-26-13, rig. Cholame Syn's Jack 2, 10-25-15, td 3641 ft, co.

SANTA BARBARA COUNTY—E. C. Arnold's Arnold-Apache 2, 8-8-33, td 6370 ft, swabbing. O. C. Field's Santa Rita 1, 11-7-33, td 3358 ft, bridge 3056 ft, to test. Gaviota Oil Co.'s Hollister 1, 35-5-33, td 3207 ft, shut in. Standard's Los Flores Land 1, 27-9-33, dr shale 2282 ft. Wilshire Oil Co.'s Hollister 1, 35-5-33, rig.

VENTURA COUNTY — Oxnard Oil Co.'s Vanoni 1, 10-1-22, td 6302 ft, plug 6200 ft, to resume redr. Vaca Oil Explor. Co.'s Lennox 1, 6-1-21, td 2855 ft, to test. Richfield's McFarland 1, 13-2-21, dr shale 6330 ft. Texas Co.'s Edwards 1, 13-3-21, dr shale 4815 ft; Yale Richardson 1, rig.

### SOUTHERN CALIFORNIA

WILMINGTON AREA—Alford Dev. Co.'s Classif. Yards 3, 22-4-13, dr shale 5725 ft.

PALMDALE—Antelope Valley Pet. Co.'s No. 1, 17-6-12, rur.

NEWHALL—Barnsdall Oil Co.'s Rancho S. F. 2, 26-4-17, dr hard shale 5925 ft.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, td 2495 ft, co.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-14, td 5502 ft, plug 5262 ft, perforated, water broke in, to recement.

TICK CANYON—Mint Canyon Pet. Co.'s Jennings 1, 35-4-14, dr hard shale 690 ft.

GARVEY—W. E. Ramsey's Monte Christie Oil Co.'s Bass-Goodnight 1, 27-1-12, td 2375 ft, straightening hole.

PALIOS VERDES HILLS—Rolling Hills Pet. Co.'s No. 1, td 1375 ft, co.

CASTAIC—Royal Lands Corp.'s No. 1, 8-4-17, dr hard sand 190 ft.

GARDENA—Texas Co.'s Gardena Com. 1, 30-3-13, dr shale 4325 ft.

ORANGE COUNTY—Shell's Harbeson 1, 9-4-10, dr shale and gray sand 8566 ft; Yorba Linda core hole H, 16-3-9, ready to spud.

SAN BERNARDINO COUNTY—Silegna Dr. & Prod. Co.'s Abacherlit 3, 12-3-8, dr shale 490 ft.

## ILLINOIS

BOND COUNTY—Universal Wells Serv. Co. et al's Molder 1, nw nw nw 24-6n-4w, sd 1130 ft. A. T. Whitehead et al's Pollan 1, nw se sw 26-6n-2w, sd 2633 ft.

CHRISTIAN COUNTY — Parshall-Graham Co.'s Yockey 1, sw sw ne 36-15n-2w, pb 1967 ft, pb 1967 ft, D & A Rogers Bros. et al's Johnson 1, ne se se 27-12n-2w, cor 2472 ft. Siegel & Schlosberg's Glass 3, nw nw sw 29-12n-2w, td 1052 ft, D & A.

CLAY COUNTY—Southern Ill. Pet. Co.'s Knodacker 1, nw se sw 23-3n-7e, sd 2830 ft. C.H. & O. Oil Co. et al's Duff 1, cs/s nw ne 7-2n-8e, to pb & dr out with stand tools. J. E. Milburn's Striegle 1, se nw ne 19-3n-8e, der. Bonnie Oil Co.'s Schnautz 1, se sw ne 31-4n-8e, cor 3036 ft. Vermillion Oil Co.'s Duff 1, cs/2 ne se ne 19-3n-8e, rust; to pb Wiser Oil Co. et al's Irwin Est. 1, cn/2 se nw 12-2n-7e, der. J. V. Wicklund's McCauley 1 "A," ne sw nw 7-2n-9e, C & P Campbell et al's Walter Henderson 1, cn/2 ne ne 7-4n-7e, C & P.

CLINTON COUNTY—R. E. Dalton's Clifton 1, ne sw sw 15-1n-4w, sd 483 ft. W. C. McBride's Schultte 1, sw sw ne 3-2n-4w, td 1235 ft, D & A. Holley & Willis' Muex 1, ce/2 ne ne 18-3n-2w, td 1140 ft. Ellzy et al's Williams 1, sw nw sw 1-3n-1w, der. Schlosberg & Siegel's Monken 1, ne sw sw 4-2n-1w, sd 1109 ft.

COLES COUNTY—W. J. Miller et al's Tomberlin 1, se se se 21-11n-10e, spd & sd. W. E. Hughes' Swango 1, csw ne 27-13n-9e, dr 175 ft.

CUMBERLAND COUNTY—Jolly-Hill-Stipes et al's Jenkins 1, se ne ne 30-10n-9e, sd 1966 ft.

EDWARDS COUNTY—Cotton & Laller's Hays 1, ne ne ne 4-1s-10e, lcn.

EFFINGHAM COUNTY—Kingwood & Carter Oil Co.'s Bartel 1, ce/2 ne nw 26-6n-5e, td 4102 ft; testing.

FAYETTE COUNTY—Benedum & Trees' Moore-Clayton Van Zandt 1, sw sw sw 24-6n-1w, cor 2747 ft. Hausman et al's Northwestern Ins. Co. 1, csw ne 22-6n-1e, cor 1506 ft. Carter Oil Co.'s Miller 1, cw/2 nw nw 12-8n-3e, rep pump. Schroeder et al's Lilly 1, se sw se 16-8n-3e, sd 1275 ft. Carter Oil Co.'s Clow 1, ce/2 sw ne 15-8n-3e, woc 205 ft. Wilson & Stokes' Fee 1, nw sw ne 14-8n-3e, lcn. W. B. Greer's Metzger 1, cn/2 ne nw 19-5w-2e, spd.

FRANKLIN COUNTY—Robert Markham's Whittington 1, ce/2 sw se 18-5s-3e, lcn. Washburn Pet. Corp.'s Neil 1, ce/2 se se 6-5s-4e, sd for rep.

GREENE COUNTY—M. V. Yeager's Robinson 1, se sw nw 17-10n-11w, td 1244 ft. Nat'l Consumers Oil Co.'s Jackson 1, nw ne nw 21-11n-12w, may dd.

HAMILTON COUNTY—Carpenter et al's Clarke 1-A, nw nw sw 32-3s-5e, sd 1000 ft. The Texas Co.'s Silverman 1, ce/2 sw nw 16-3s-7e, dr 2365 ft.

JASPER COUNTY—C. R. Overmeyer's Atkins 1, nw nw ne 3-6n-9e, sd for fuel oil. LeWright et al's Wilkins 1, sw sw sw 36-6n-9e, abd lcn. Denver P & R Co.'s Ochs 1, nw nw ne 33-6n-14w, dr 1710 ft. Hoffman et al's King 1, sw nw nw 20-8n-10e, td 2153 ft.

JEFFERSON COUNTY—Siegel & Schlosberg's Schneider 1, ne ne se 15-1s-1e, mi dr pipe. Carter Oil Co.'s Tate 1, cw/2 nw ne 10-1s-2e, to pb & test. Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, ru mach. Nollem & Benoist's Kelley 1, ne nw ne 25-4s-2e, sd for csg 1675 ft. E. J. Dees & W. J. Carter's Hamilton 1, ne sw nw 20-4s-3e, 225 ft oih, sd. Sturbois & Tomberlin's J. B. Morris 1, nw

nw sw 6-2s-2e, der. Benedum & Trees' Arthur Owen 1, nw se sw 23-4s-3e, bldg rot der.

JERSEY COUNTY—Boyd et al's Wyman 1, nw se nw 32-7n-12w, sd 930 ft.

MARION COUNTY—Dee & Nordam's Roddy 1, sw se sw 20-2n-3e, tools stuck at 2182 ft. Bonnie Oil Co.'s Daniels 1, cse/4 18-2n-4e, sdo 2801 ft. Marion Oil Co.'s Wilson 1, ne ne se 18-3n-3e, sd 1109 ft. Coleman-Blosser's Britt 1, nw nw nw 36-4n-1e, sd 1200 ft. Mahutske Oil Co.'s Nichols 1, se sw se 12-4n-4e, dr 2685 ft. Alexander et al's Pope 1, ne ne ne 26-3n-1w, dr 898 ft (corrected). W. C. McBride's Clow 1, sw sw se 29-2n-1e, spd. Helmerich & Payne's Stephens 1, sw sw sw 35-3n-4e, spd & sd. Evans et al's Morey 1, se se nw 4-4n-1e, mi mach. Schriver et al's Schreurer 1, se se ne 12-4n-1e, dr 1405 ft.

MASSAC COUNTY—Kahle et al's Harvick 1, sw sw sw 23-14s-3e, cor 2840 ft; no shows.

MONTGOMTRY COUNTY—Schlosberg & Siegel's Nieman 1, cse sw 29-8n-5w, dr 716 ft.

POPE COUNTY—C. C. Whitlock et al's Amthis 1, nw nw ne 12-11s-5e, sd 1352 ft.

RANDOLPH COUNTY—W. A. Delaney & J. E. Mabee's Wilson 1, ce/2 se ne 3-4s-5w, dr 2715 ft.

RICHLAND COUNTY—Hollingsworth O & G Co.'s Waggoner 1, ne nw nw 5-3n-14w, td 2596 ft. Mammoth P & R Co.'s McCauley 1, sw se nw 28-3n-9e, co 3146 ft. Sam Raitman's Richey 1, cne nw 12-4n-14w, lcn. Bill Loving et al's Blude Ridge Church 1, ne ne se 26-4n-9e, der. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, rig. Kingwood & McMahon's Negley Bros. 1, nw nw se 31-5n-9e, dr 2667 ft. Frost's Farris 1, sw sw se 18-3n-10e, sdo 3083 ft. Parker et al's Berry 1, se sw ne 22-2n-14w, spd & sd.

SALINE COUNTY—Will Rogers et al's Saylor 1, se se se 3-10s-6e, sd 1125 ft. C. F. Bolton's Beagle 1, nw nw ne 13-9s-7e, dr 700 ft.

SCOTT COUNTY—Gregory & Mechling et al's Foltz 1, nw sw ne 31-14s-14w, td 1196 ft; sd.

SHELBY COUNTY—E. Breazeale et al's Richardson 1, snw nw 35-12n-14e, spd 18 ft & sd. Ray Farrior's Fritz 1, ne ne 1-12n-2e, lcn.

WABASH COUNTY—Martin et al's W. R. Wood 1, ne se nw 31-1n-12w, dr 378 ft. Deck & Hays' Provident Mutual Life Ins. Co. 1, cse nw 25-1s-13w, spd.

WARDS COUNTY—Dr. W. F. Schmidt's Strenne 1, ne nw ne 5-1n-14w, spd. Leach Bros' Lee 1, sw ne se 11-1s-10e, dr 2840 ft. Harry Cotton's Leibke 1, ne ne sw 20-1n-14w, C & P Cotton & Lalen's Hays 1, ne ne ne 4-1n-10e, lcn.

WAYNE COUNTY—Gordon et al's Taylor 1, cnw sw sw 15-1n-7e, mim.

WHITE COUNTY—Davis & Harrell's Poorman 1, ne nw nw 5-4s-8e, dr 3185 ft.

WILLIAMSON COUNTY—Edward C. Snyder's Flemming 1, cse ne 9-10s-2e, mim.

## OKLAHOMA

ADAIR COUNTY—B. L. Maddox' Penn Mutual Life Ins. Co. 1, cs½ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY—C. M. Sheldon & Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, td 1789 ft, rng 8-in csg.

BECKHAM COUNTY—Mid-American Oil Co.'s Biscoe 1-A, sw sw sw 28-8n-22w, dr 2240 ft.

BRYAN COUNTY—Southern Oil Co.'s Henry 1, cnw ne 10-8s-7e, der.

CADDO COUNTY—I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, dr 6214 ft.

CARTER COUNTY—Lloyd & Noble's Revelle 1, sw sw se 21-3s-2w, td 4028 ft, sdo.

CIMMARON COUNTY — Hagey et al's Becker 1, cne¼ 4-1n-13ecm, pb to 2900 ft, flo 8,750,000 cf gas, comp.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, fsg 6850 ft.

CHOCTAW COUNTY—V. K. Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, td 260 ft, run 10-in csg. J. A. True's Boby 1, nw se nw nw 17-7s-19e, dr 1365 ft.

COAL COUNTY—Phillips Pet. Co.'s Beck 1, se sw sw 6-1n-9e, td 5643 ft. sdo. Carter Oil Co. et al's Claytor 1, cw½ ne sw 27-2n-9e, td 6715 ft, testing.

COMANCHE COUNTY—J. W. Wolfe's Costinus 1, sw sw se 30-4n-11w, spd. Frank Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft.

COTTON COUNTY—Bowers & Wise' Pendergraft 1, nw se sw 4-4s-12w, sd for rot tools.

CREEK COUNTY—M. W. Mosier et al's Holcomb 1, se sw ne 19-18n-8e, 2000 ft oih and sso, sd.

GARFIELD COUNTY—H. R. Hollenback et al's Clark 1, nw nw nw 34-21n-6w, dr 5976 ft.

GARVIN COUNTY—B. C. D. Edwards' Clark 1, ne ne ne 16-3n-3e, bailing at 2098 ft.

GRADY COUNTY—Gulf Oil Corp.'s Th[illegible]as 1, sw nw nw 14-4n-5w, dr 9301 ft. Doy[illegible]et. Co.'s Huffine 1, nw nw se 30-5n-8w, d[illegible]

GRANT COUNTY — Magnolia [illegible] Co.'s Reynolds 1, ne ne se 19-25n-5w, dr 5160 ft.

GREER COUNTY—J. I. Medlin et al's Broudie 1, nw nw nw 5-6n-20w, td 90 ft (corrected), sd.

HUGHES COUNTY — Phillips Pet. Co.'s Becker 1, ne nw sw 8-5n-10e, dr 4950 ft. Pure Oil Co.'s Rogers 1, se se ne 18-8n-12e, dr 5035 ft. Homer Doup et al's Bank 1, ne ne nw 7-7n-9e, rust and sd. Kenneth Ellison et al's Metro Life 1, cne ne 14-7n-9e, rur.

JEFFERSON COUNTY—Massad & Swainsberger's Barrett 1, ne se se 14-6s-6w, sd 1800 ft. H. W. Weir et al's Hayes 1, se se nw 23-7s-7w, der.

JOHNSTON COUNTY—Patton et al's McCrummens 1, sw sw ne 16-1s-6e, sd 1380 ft. W. T. Shelton's Chapman 1, cnw nw 26-4s-6e, td 2510 ft, dr by lost bit.

KAY COUNTY—Fortuna Oil Co.'s Harris 1, sw sw ne 14-25n-1e, sd 282 ft. E. J. Shaffer et al's McKee 1, ne ne nw 20-28n-1w, sd 2500 ft. E. W. Jones et al's Dorse 1, se sw nw 25-26n-1w, dr 4068 ft. F. S. Freeland et al's Watson 1-A, ne nw nw 28-28n-1w, dgng cel and rog. E. J. Shaffer et al's Rudolph 1, ne ne sw 27-29n-1w, cel. Clark C. Nye's Willis 1, se se sw 24-27n-4e, c&p. Helmerich & Payne's Scott 1, se se ne 20-28n-1w, rig.

KIOWA COUNTY—Hughes & Reese' Fultz 1, se se se 10-6n-18w, dr 1168 ft.

LINCOLN COUNTY—C. L. Carlock et al's Young 1, cn½ nw nw 23-15n-5e, to pb to 4390 ft, sdo.

LOGAN COUNTY—Anthony & Marshall's Fruin-Eckman 1, se se sw 4-16n-1e, so&g, sd 5181 ft. The Texas Co.'s Roper 1, cw½ sw se 22-16n-1e, td 5542 ft, sdo.

LOVE COUNTY—Sinclair Prairie Oil Co.'s Peabody Seating Co. 1, ne ne ne 35-6s-2w, lcn.

MAJOR COUNTY—Ed Parson's Patzkowsky 1, cnw¼ 10-20n-11w, rig.

MARSHALL COUNTY—Paul Robb et al's Vittitoe 1, cne se 11-5s-4e, sd 5461 ft.

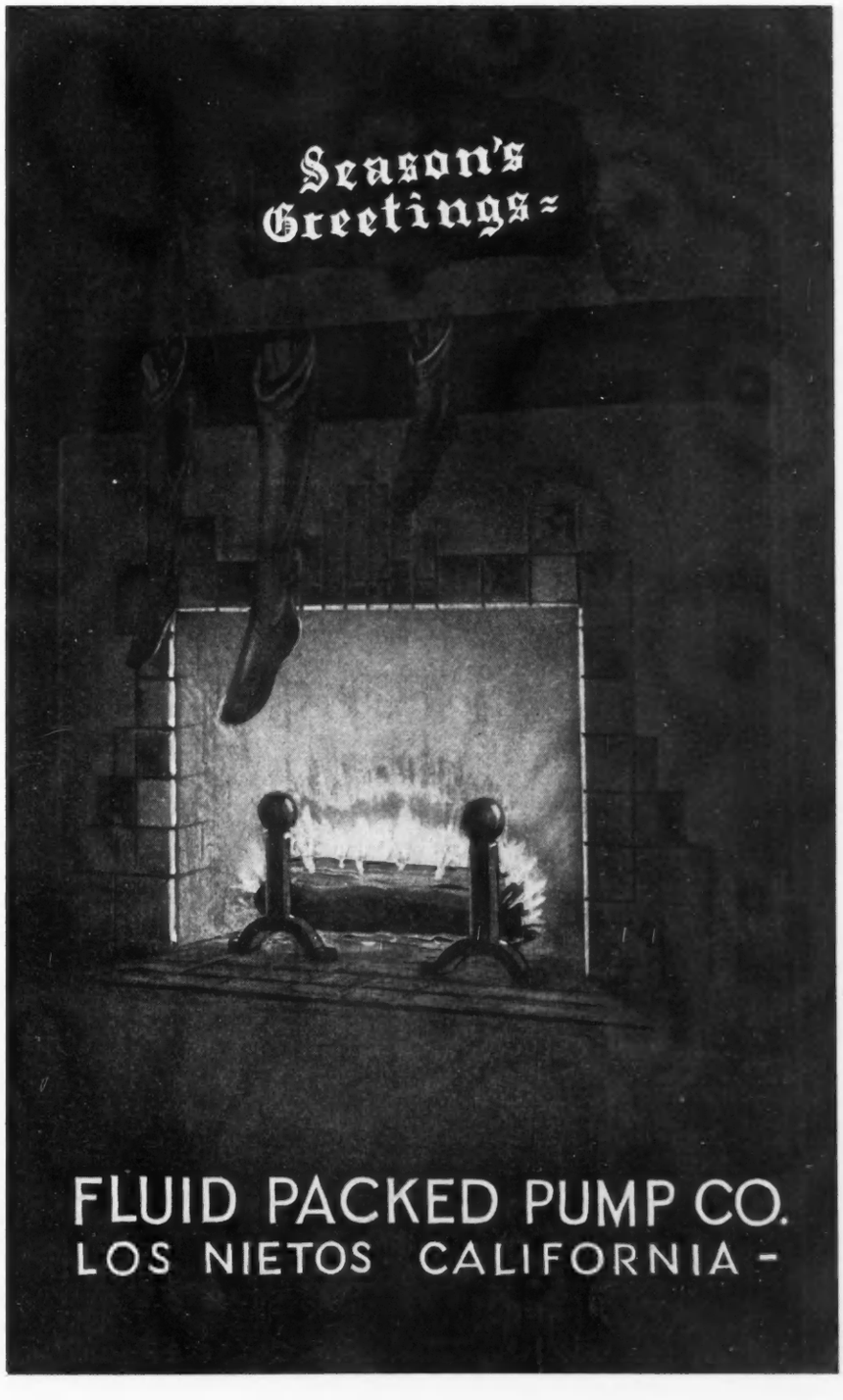
MURRAY COUNTY—O. O. Owens' Gryer 1, ne se ne 34-1s-3e, dr 2685 ft.

MUSKOGEE COUNTY — F. E. Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

OKFUSKEE COUNTY—Mid-Continent Pet. Corp.'s Inland 1, sw ne sw 10-13n-10e, rig.

OKMULGEE COUNTY—Phillips Pet. Co.'s Wood 1, nw sw sw 31-11n-13e, dr 2665 ft.

PAYNE COUNTY—Stanolind O&G Co. &



Amerada Pet. Corp.'s Bennett 1, nw se ne 31-19n-4e, td 4156 ft, dst with packer at 4096 ft, fill 135 ft with mud and 1120 ft with sw, 1 hr. Mid-Continent Pet. Corp. et al's Ramsey 1, sw sw nw 18-18n-2e, dr 1650 ft. Sagamore Drlg. Co.'s Moore 1, se sw nw 17-18n-1e, rig.

PITTSBURG COUNTY — Okla. Dist. Oil Co.'s Beeler 1, ne ne sw 7-7n-14e, dr 6065 ft. Phillips Pet. Co.'s Gilcrease 1, nw nw se 16-7n-12e, td 5760 ft, sdo.

PONTOTOC COUNTY—Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, sd at 3320 ft. H. W. Lee's Weatherly 1, nw se nw 24-1n-7e, rig. Riddle et al's Fee 1, nw sw se 11-3n-5e, rur.

PUSHMATAHA COUNTY—Erle Halliburton et al's Bagwell 1, sw ne ne 30-2s-15e, td 6010 ft, temp abn.

ROGER MILLS COUNTY — Central Pet. Corp.'s Lambe 1, se se se 27-14n-21w, rig corners and sd.

SEMINOLE COUNTY—J. F. Root's Cone 1, nw ne sw 11-7n-5e, c&p. W. B. Osborn et al's Harris 1, nw nw nw 11-6n-5e, pb 2968 ft, shot with 25 qts, D&A. W. C. McBride's Jackson 1, ne ne sw 16-6n-7e, td 1813 ft, D&A. H. V. Woodson & Marydun Oil Co.'s Gilliland 1, se se sw 24-11n-7e, dr 2975 ft.

STEPHENS COUNTY — Coline Oil Co.'s Johnson 1, sw se ne 1-2n-8w, csg collapsed at 8689 ft, sdo. Ed Parsons et al's Blake 1, csw nw 22-2n-8w, est 50 to 75 bbls oil, to pump. Clark & Cowden's Simpson 10, ne se ne 11-1n-5w, cor 6338 ft, sdo.

TEXAS COUNTY—Hagey et al's Peck 1, cne ¼ 6-1n-13ecm, set 5-3/16-inch csg at 2840 ft, dr plugs.

TILLMAN COUNTY—Tom Walker's Bowman 1, sw sw nw 10-4s-17w, sd 200 ft. Caben et al's Southerland 1, sw sw nw 35-4s-16w, sd 44 ft.

WASHITA COUNTY—L. B. McWhirter et al's Fee 1, nw sw sw 34-8n-19w, sd 1810 ft.

## KANSAS

BARBER COUNTY—Palmer Oil Corp. et al's Warwick 1, cnw 29-31s-10w, ru and sd. Kansan Oil Corp.'s Mease 1, ne se se 27-30s-11w, td 4448 ft, sso, rust. Pryor & Lockhart's Pickens 1, cwl e½ sw 34-30s-14w, dr 2355 ft. Helmerich & Payne's Winter 1, nw nw sw 16-32s-10w, set 12-in csg 105 ft, woc.

BARTON COUNTY—C. L. Price et al's Hammeke 1, ne ne sw 12-18s-12w, bailing. Martin & Foraker et al's Dick 1, ne sw sw 31-19s-11w, mim. Shell Pet. Corp.'s Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 2800 ft oih. Ash et al's Frees 1, nw nw nw 34-16s-11w, ur 12-in csg 765 ft. R. E. Day et al's Feltes 1, se se ne 14-16s-12w, dr 480 ft. Shell Pet. Corp.'s Eckhart 1, se se sw 13-16s-14w, dr 1780 ft. Lauck & Moncrief & Vernon O&G Co.'s Rodenburg 1, ne se sw 6-17s-12w, dr 2310 ft. Thayer Drlg. & Brouk's Soderstrom 1, se se nw 21-17s-13w, dr 390 ft. Sinclair Prairie Oil Co.'s Oeser 1, ne ne se 17-16s-11w, lcn.

BUTLER COUNTY — Reeves & Kinnan's Heim 1, sw sw sw 5-29s-3w, rot rig. Steinbuchel et al's Fox 1, nw se ne 25-26s-3e, co 755 ft. T. S. Dustin's Miley 1, se nw ne 17-27s-5e, dr 395 ft.

CHASE COUNTY—T. D. Duffy's Leedy 1, ne nw nw 26-22s-9e, sd 50 ft.

CHAUTAUQUA COUNTY—Harrison et al's Brown 1, ne se ne 19-34s-10e, sd 820 ft. I. W. Siegle's Temple 1, sw sw sw 31-32s-12e, dr 400 ft. Sooby et al's Davis 1, sw ne nw 29-33s-10e, td 1019 ft, making 1 bbl oil per day.

CLARK COUNTY—Olson Oil Co. et al's Watkins 1, sw sw nw 23-32s-21w, rust at 5311 ft. Olson Oil Co.'s Lehman 1, se se sw 20-32s-21w, dr 3001 ft.

COWLEY COUNTY—Pryor & Lockhart's Brown 1, ne se se 34-33s-3e, co 3403 ft. Smith & Price' Henderson 1, sw sw sw 25-32s-6e, sd 2800 ft. Earl Wakefield's Whitson 1, sw ne se 8-32s-4e, dr 1985 ft. Arthur Brewer Co.'s Shepherd 1, ne ne sw 20-32s-4e, td 3061 ft, D&A. Murta-Wilson et al's Stuber 1, se ne ne 27-30s-5e, dr 2380 ft. Dickey Oil Co.'s Kansas G&E Co. 1, ne ne ne 22-34s-3e, dr 2850 ft. Roth & Faurot's Fry 1, nw sw sw 8-31s-3e, dr 1540 ft. Trees Oil & Talbott's McMinn 1, ne ne nw 16-31s-6e, cel.

EDWARDS COUNTY—Douglas & Gear's Meade 1, se se nw 35-25s-16w, sdo.

ELLIS COUNTY—P. G. Reynolds et al's Karlin 1, nw nw nw 13-12s-18w, sd 3607 ft. Skiles et al's Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Colonial Oil Co. & Bernheimer's Albert 1, sw sw ne 13-12s-18w, ur 7-in csg 3515 ft. Glimac Oil Co. et al's K. C. Life Ins. Co. 1, se sw nw 5-11s-18w, rig. Colonial Oil Co.'s Hadley 1, se ne se 5-11s-18w, lcn. Bradley Oil Co.'s Jensen 1, nw nw se 36-11s-19w, cor 3695-3710 ft, show sulph wtr. C. L. Carlock's Heyle 1, se se nw 14-13s-16w, dr 732 ft. Continental Oil Co.'s Baumrucker 1, ne ne sw 25-14s-16w, dr 3030 ft. Helmerich & Payne et al's Stebbins 1, nw nw se 7-13s-30w, dr 3598 ft. J. J. Muth's Penney 1, cnl ne se 29-14s-18w, co 350 ft. Watchorn O&G Co.'s Brown 1, ne ne se 34-13s-17w dr 2802 ft. General Mach. & Tools Co.'s Jensen -, sw se ne 26-12s-18w, co 2933 ft.

ELLSWORTH COUNTY—Colonial Oil Co.'s Hogy 1, nw nw sw 16-16s-10w, dr 425 ft. Hinkle et al's Andrea 1, ne ne se 17-17s-10w, dr 2190 ft. Ralph Wixon et al's Peterman 1, sw sw sw 28-17s-10w, dr 425 ft.

FORD COUNTY—Olson Oil Co. et al's Fowler 1, csw¼ 26-27s-22w, td 5907 ft, D&A.

GRAY COUNTY—P. G. Reynolds' Watkins 1, csw 32-28s-28w, rot rig.

GREENWOOD COUNTY — Whittaker & Johnson's Cannon 1, cel se nw 8-26s-13e, td 1504 ft, rng 5-in csg. John Nichols et al's Central Life Ins. Co. 1, sw sw se 35-25s-12e, spd and sd.

HARVEY COUNTY — Allison & Fitzwilliams et al's Hawk 1, se sw ne 16-24s-1w, hfw 3145 ft, rng 6-in csg. Nat'l Ref. Co.'s Brown Bros. 1, nw se ne 22-23s-2w, rig.

JACKSON COUNTY—Lemmick Oil Co.'s Marble Savings Bank 1, cne ne 26-9s-14e, sd 510 ft.

JEWELL COUNTY — Hollingsworth Bros.' Wolfe 1, nw sw se 14-4s-8w, spd and sd.

LANE COUNTY—Phillips Pet. Co.'s John Kees 1, cse se 3-19s-30w, brr.

MARION COUNTY—Tom Palmer et al's Matz 1, sw sw se 8-19s-1e, run 8-in csg at 2825 ft.

McPHERSON COUNTY—Dole-Park Dev. Co.'s Doles 1, ne nw ne 12-19s-1w, set 6-in csg 3072 ft, co. Clyde Pulse et al's Boesker 1, se se nw 29-20s-1w, rig. Boyle & Grossman's Diener 1, se se ne 35-19s-1w, dr 2760 ft. Carter Oil Co.'s Hoglund 1, cw½ sw nw 8-17s-3w, dr 2857 ft. Phillips Pet. Co.'s Galle 1, nw nw ne 11-21s-2w, dr 3275 ft. Archer & Crane's Templin 1, nw sw se 32-17s-3w, rig.

MEADE COUNTY—Pacific Mid-West Oil Co.'s Rexford 1, ne se sw 8-30s-29w, sd 900 ft.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, fsg 3265 ft. Marshall Drlg. Co. et al's Anderson 1, sw sw nw 23-16s-24w, spd and sd. Trojan O&G Co.'s Moses 1, csw nw 10-18s-25w, sd 500 ft. Continental Oil Co.'s Olson 1, sw nw nw 5-18s-25w, dr 3727 ft.

PAWNEE COUNTY—Stanolind & Amerada's Jantz 1, sw sw sw 25-20s-16w, pb 3817 ft, woc. Phillips Pet. Co.'s F. A. Johnson 1, cne sw 8-20s-19w, sd 4056 ft.

PHILLIPS COUNTY—C. W. Davidson et al's Elliff 1, se ne ne 35-5s-18w, sd 575 ft.

PRATT COUNTY—Skelly et al's Adams 1, se nw ne 2-28s-11w, dr by 4265 ft. Helmerich & Payne et al's Hoeme 1, se se ne 20-26s-1w, dr 735 ft. Ohio Oil Co.'s Howell 1, csw sw 21-29s-15w, mim.

RENO COUNTY—Sam Schneider et al's Kroecker 1, ne ne ne 12-22s-5w, dr 3977 ft. Street & Butler's Kincaid 1, ne ne nw 13-24s-4w, ru and sd. Carey et al's McPheeters 1, ne ne nw 22-26s-8w, dr 965 ft. W. E. Witt et al's Fair 1, nw se se 4-22s-8w, testing. Cohen et al's Teter 1, se se sw 3-23s-5w, ru and sd. Westgate-Greenland Oil Co. et al's Popp 1, sw sw ne 7-25s-4w, sd 3835 ft. McCole et al's Mathews 1, sw nw nw 15-24s-10w, cel.

RICE COUNTY—Gillespie et al's Strong 1, ne ne nw 9-18s-8w, abd. Jno. Hanna et al's Marshall 1, ne nw nw 30-18s-8w, td 1530 ft. abd. Skiles et al's Campbell 1, se se ne 28-19s-9w, td 2957 ft, sd. Joe ylward's Weihe 1, sw sw ne 23-18s-9w, dr 185 ft.

ROOKS COUNTY—Producer Oil Co. et al's Ham 1, sw sw nw 25-7s-19w, sd 200 ft. Graham et al's Fike 1, sw sw sw 9-9s-17w, fsg. C. R. Craft et al's Ziegler 1, ne ne sw 8-10s-16w, dr 3566 ft. Colonial Oil et al's Tucker 1, sw se nw 23-10s-17w, rur. Texa Trading Co.'s Probst 1, sw sw ne 18-6s-19w, dr 3415 ft. Producers Oil Co.'s Tucker 1, sw se nw 23-10s-17w, dr 3305 ft. Ross Oil et al's Hancock 1, ne ne nw 5-10s-17w, dr 2500 ft. Witt & Sheridan et al's Morrison 1, nw se sw 29-10s-17w, rot rig. Elwell et al's Insurance Co. 1, ne ne nw 15-9s-18w, lcn. Colonial Oil et al's Hancock Life Ins. Co. 1, nw sw sw 21-10s-18w, mim.

RUSH COUNTY — Wakefield & Brouk's Kerbs 1, nw nw se 11-17s-16w, dr 2500 ft.

RUSSELL COUNTY—Emrichs et al's Anderson 1, ne se sw 33-15s-11w, spd and sd. Murfin & Vernon O&G Co.'s Pearson 1, ne ne ne 31-15s-15w, dr 3245 ft. Jones & Shelbourne's Short 1, ne ne ne 12-15s-12e, dr 2075 ft. Phil-Han & Hinkle's Reinhardt 1, se se sw 19-14s-14w, dr 1980 ft. Shields et al's Rogg 1, nw nw sw 28-14s-13w, ru. Parks et al's Gorham Est. 1, sw nw ne 19-15s-15w, rig.

SEDGWICK COUNTY—I. W. Murfin et al's Martin 1, se se nw 18-28s-1e, swb 45 bbls oil, 24 hrs. W. C. Talbott et al's Downs Est. 1, se se nw 32-28s-2e, testing. Union O&R et al's Howell 1, sw sw sw 6-29s-1e, sd 2400 ft. Frank Hudson et al's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. McKnabb et al's Garrett 1, se sw sw 18-29s-1e, sd 100 ft. Steinbuchel's Shaffer 1, sw sw nw 18-25s-1e, co 3368 ft. Steinbuchel et al's McAdams 1, sw sw ne 28-29s-1e, spd and sd.

STAFFORD COUNTY — Hinkle et al's Moses 1, nw nw sw 9-22s-13w, dr 3355 ft. Tom Palmer's Fair 1, se ne sw 10-22s-11w, td 3645 ft, D&A. Torry & Feaster et al's Heggy 1, ne ne sw 26-33s-11w, rur. Stanolind O&G Co.'s Wadsack 1, sw sw ne 4-25s-11w, dr 3660 ft. Torry & Feaster et al's Negley 1, sw sw ne 23-22s-12w, dr 692 ft. Lindsay & Bailiere et al's Tiepermann 1, sw sw nw 31-22s-12w, dr 3663 ft. Winemiller et al's Sittner 1, sw sw sw 4-22s-12w, mim. Rust et al's Sims 1, nw nw sw 8-23s-11w, dr 1520 ft. Torry & Feaster et al's Landerman 1, sw sw ne 23-22s-12w, dr 2725 ft.

SUMNER COUNTY — W. M. McKnab's Blair 1, sw sw sw 7-30s-1e, td 3869 ft, swabbing. R. J. Wixon's Newton 1, se se se 31-30s-2e, dr 3305 ft. Saco Oil & Cameron et al's Phipps 1, sw se ne 24-30s-1w, spd and sd. Hugh T. Jones et al's Stunkel 1, se se sw 2-30s-1w, rig. E. B. Shawver's Stewart 1, nw nw se 4-32s-3w, cel.

TREGO COUNTY—Carlock's Kinzel 1, sw sw sw 9-13s-22w, spd and sd.

WOODSON COUNTY—Charles Reeser et al's Weide 1, nw nw se 18-25s-14e, sd 1150 ft.

## MICHIGAN

ALLEGAN COUNTY — Frank Vahue's Chadbourn 1, 28-2n-13w, sd 1305. Lenoran Pet. Co.'s Delegowski 1, 22-4n-12w, lcn. Robert Lentz's Hitzler 1, 34-4n-12w, dr 1390 ft. Huges Heinig's Lundburg 1, 29-3n-14w, dr 550 ft. Adrain Stellard's Schafer 1, 29-3n-12w, mim. Sim B. Hood's Wright 1, 9-3n-13w, sd 1275 ft.

ARENAC COUNTY—B. A. Bartlett's Rembisz 1, 35-19n-3e, sd 2046 ft. R. E. Hill's Reinhart 1, 25-19n-5e, driving 10-in csg, 100 ft. Tamblyn & Stork's McFarlan 1, 34-20n-3e, mim. D. J. Jones' Sibley 1, 33-20n-7e, sd 2300 ft.

BAY COUNTY—Fortney Oil Co.'s Smart 1, 7-16n-5e, Dundee 2809 ft, sd 3014 ft. Charles Weller's Dewyer 1, 20-16n-3e, dr 3300 ft. Gulf Refining Co.'s Marston 1, 1-14n-4e, dr 1300 ft. Stork Oil Co.'s Century 1, 9-17n-3e, sd 3037 ft. Century Oil Co.'s Wilson 1, 27-17n-3e, dr 450 ft.

CLARE COUNTY—Sun Oil Co.'s Weldon 1, 14-19n-3w, sd 2700 ft. James McKay's Fee 12, 24-18n-5w, dr 1300 ft.

GLADWIN COUNTY — McClanahan Oil Co.'s Connoly 1, 35-17n-2e, Dundee 3388 ft, so 3445 ft, 1000 ft oil in hole at 3519 ft, td 3527 ft, to acidize. W. E. Ross' Kinyon 1, 18-18n-2e, dr 200 ft. Rex Oil Co.'s Auer 1, 22-18n-2e, rig. Daily Crude Oil Co.'s Caplan 1, 10-19n-1e, spd.

GRATIOT COUNTY—Bliss & Redman's Martin 1, 26-10n-3w, Michigan Stray 930 ft, sg 930-40 ft, csg 6-in 1140 ft. Chartiers Oil Co.'s Bolyard 1, 12-9n-4w, sd 3390 ft. Henry Kritzman's Nickert 1, 33-11n-4w, rig.

HURON COUNTY—L. D. Hendershot's Klamp 1, 1-17n-14e, sd 2029 ft. C. W. Teater's Martin 1, 15-15n-11e, dr 2650 ft.

IONIA COUNTY—Rex Oil Co.'s Marion 1, 11-8n-5w, dr 700 ft.

ISABELLA COUNTY—J. Golden Zabel's Kennedy 1, 25-14n-4w, dr 540 ft. Cryden & Rowmor's Smith 1, 35-15n-5w, csg 6-in 1862 ft.

KENT COUNTY—Barton & William's Oudermeulen 1, 29-5n-12w, dr 150 ft.

LAKE COUNTY—Cherry Valley Oil Co.'s Rice 1, 25-18n-12w, dr 1080 ft.

MECOSTA COUNTY—Sun Oil Co.'s Robart 1, 29-16n-7w, reaming 960 ft. Frank Hebard's Weeks 1, 32-15n-7w, sd 600 ft.

MIDLAND COUNTY—Sun Oil Co.'s State B1, 5-16n-1w, testing 3955 ft. Chapman & Associates' State 1, 27-16n-5w, dr 100 ft. Daily Crude Oil Co.'s State 1, 29-15n-2e, dr 3200 ft.

ROSCOMMON COUNTY—Maynard Smith's Eggleston 1, 32-21n-2w, reaming 1730 ft.

## MONTANA

FERGUS COUNTY—Whitetop Oil & Gas Co.'s 1, cne sw 35-14n-19e, dr 1030 ft.

LEWIS & CLARK COUNTY—Wm. Hanlon's Durnin 1, nw nw sw 11-18n-5w, dr 585 ft.

YELLOWSTONE COUNTY — Broadview Dome Oil Co.'s Halbritter 1, ne ne sw 18-3n-23e, dr 3894 ft.

## WYOMING

ALBANY COUNTY—Ohio Oil Co.'s D. J. Griffin 2, csw se sw 2-21n-77w, dr 3516 ft. Wyco Oil Co.'s Chappell 2, ne ne nw 33-21n-76w, dr 2299 ft.

CARBON COUNTY—Italo Petroleum Corporation's Tunney-Bragg 1, cne se nw 11-26n-80w, ru. Producers Oil Co.'s Lake Valley 1, cnw ne 14-20n-68w, dr 1475 ft.

FREMONT COUNTY—Stanolind Oil & Gas Co.'s Johnson 1, cse se 3-33n-96w, dr 6340 ft.

HOT SPRINGS COUNTY—Deleware Oil Co.'s Government 1, se se 2-43n-96w, lcn.

NATRONA COUNTY — General Petroleum Corporation's Government 1, nw nw se 21-35n-77w, reaming at 4300 ft, to set 11¾ in csg on bottom at 4626 ft.

## FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Explor. Co. 2, se se 17-24s-25e, elev 120 ft, arr set pckr & retest at 2600 ft, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, dr 1920 ft (no recent report).

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw se se 19-4n-24e, elev 110 ft, installing new drill line td 3810 ft, shale & gumbo.

SUWANEE COUNTY—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, resetting 16-in csg at 190 ft to eliminate caving hole.

## MISSISSIPPI

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, 10-in csg 200 ft, top Vicksburg 675 ft, top Jackson 935 ft, top Cockfield 1346 ft, sd 1455 ft brown shale, strks sand & pyrites.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, sd.

HARRISON COUNTY—G. A. Hesse et al's Hingen 1, c ne 12-7s-10w, elev 69 ft, sd 2700 ft.

HINDS COUNTY—Southern Nat. Gas Co.'s Angelo Williams 1, ne nw 35-6n-4w, elev 182.7 ft, 22-in csg 89 ft, 13⅜-in csg 416 ft, Jackson 170-750 ft, Minden 1280-1445 ft, Cane River 2010-2046 ft, top Wilcox 2631 ft, top caprock 2730 ft, showed flow sulphur water 2910 ft, top salt 3085 ft, dry abn td 4346 ft. Black River Oil Co.'s Federal Land Bank 1, ne ne 11-15n-5e, cemented 12½-in csg 730 ft, dr 4028 ft. Cleve Love et al's S. F. Johnson 1, ne se 29, 6n-1w, spd and finishing rur.

KEMPER COUNTY—R. A. Keaton et al's Buckwalter Lbr. Co. 1, nec 6-10n-14e, dk blown down.

LAMAR COUNTY—Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, elev 374 ft, dr 7305 ft, black shale. Southern Miss. Pet. Co.'s (formerly carried South Miss. Oil Co.), Morris 1, se¼ 4-2n-14w, arr set surf csg.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, elev 210 ft, dr 4026 ft, lime and shale.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, 33-2n-4e, sd 365 ft, sand.

WILKINSON COUNTY—A. B. Taylor et al's Foster Creek Lbr. Co. 2, nwc 32-4n-2w, 16-in csg 65 ft, 10¾-in csg 697 ft, dr 3330 ft, shale.

YALABOUSHA COUNTY—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25s-7e, elev 285 ft, sd 205 ft. Skuna Dev. Co.'s Mrs. T. A. Turner 1, se sw ne 25-25n-6e, sd 925 ft.

## NORTH LOUISIANA

BIENVILLE PARISH—DeSoto O&G Co.'s Ashley 2, c sw se 15-16n-10w, ru & sd. Gulf's Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, dr 6580 ft, black shale. Hunt & Seaboard's Federal Land Bank 1, c s½ 10-16n-6w, elev 296 ft, 7-in csg 6867 ft, showed est 6 mil ft dry gas through ¼-in choke 7879 ft, arr deepen (Travis Peak).

BOSSIER PARISH—Union Prod. Co.'s Kerr 1, c se 24-17n-12w, dr 3990 ft (lower Marine test).

CADDO PARISH—Hunter & Hurley's Stoer 2, c se sw 10-15n-15w, lcn abn. A. O. Olsen's Sharp 1, cw½ nw 15-18n-16w, tested 12-15 mil ft gas, si for gauge, td 5624 ft. Prairie River Synd's Hutchinson 1, sw nw 15-15n-12w, elev 153 ft, top lower Marine 8380 ft, top Bodcaw sand 8775 ft, tested sgo 8987-9110 ft, arr deepen td 9141 ft. A. D. Robinson et al's Dickson 1, 22-20n-14w, elev 185 ft, top Nacatosh 870 ft, base chalk 1690 ft, arr run formation tester td 2453 ft (Tokio).

CATAHOULA PARISH—G. E. Foster et al's Peck 1, c s½ 39-10n-8e, rur.

CLAIBORNE PARISH—W. L. McClanahan's J. T. Lewis 1, sw se 25-20n-7w, elev 400 ft, top Hill 5152 ft, coring 5441 ft, sand. Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, dr 8302 ft, sand and lime. Hawks 1, 1-19n-6w, completed gasser, si for gauge td 5741 ft (Travis Peak).

DE SOTO PARISH—Clear Lake Oil Co.'s Woolums 1, nw nw 29-12n-12w, cored sand so, sd for casing td 2694 ft. Wright, Harris et al's (Kingston Oil Co.), Scott 1, ne ne 32-14n-13w, co caving hole, td 2778 ft. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, dk.

LINCOLN PARISH—E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, top anhydrite stringer 4253 ft, massive anhydrite 4493-4713 ft, cored Oolitic lime sg 5173-91 ft, Oolitic lime oil stains 5314-26 ft, top Travis Peak 5975 ft, Petitt sand with good resistivity and fair porosity 5932-41 ft, arr set 7-in csg on bottom and perf at this level in basal Glen Rose (Petitt), td 6260 ft brown shale, with slickensides.

MADISON PARISH—Continental Oil Co.'s Singer Mfg. Co. 1, 3-15n-11e, mim.

MOREHOUSE PARISH—H. J. Furlong, Jr. et al's Clark 1, 10-20n-7e, dr 4510 ft.

RED RIVER PARISH—Ark. Fuel Oil Co.'s Franklin Realty So. 1, c ne nw 20-11n-9w, dr 5320 ft lime, top anhydrite 4960 ft.

SABINE PARISH—J. C. Sutton Oil Co.'s Sabine Lbr. Co. 1, se nw ne 23-7n-14w, woc 16-in surf csg (10,000 ft test).

TENSAS PARISH—H. M. Jones' Chicago Mill 2, c ne sw 31-12n-10e, pumping in mud to prevent gas blowout td 750 ft.

UNION PARISH—Joe Modisett et al's Frost 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, 9⅝-in csg 4358 ft, top lower Marine 6145-6200 ft, dr 6916 ft, black shale.

WEBSTER PARISH—Magnolia's Sexton 1, c sw ne 32-23n-9w, 13⅜-in csg 838 ft, dr 2345 ft, shale.

## SOUTH LOUISIANA

ACADIA PARISH—J. E. Daniel's Setting 1, Trilby area, 17-7s-1w, dr shale 3879 ft. Gulf's Broussard 1, Midland area, 49-10s-2w, dr shale 9598 ft. Humble's Sarver 1, South Crowley prospect, 35-10s-1e, fsh 10,272 ft.

CALCASIEU PARISH—D & D Oil Co.'s Lutcher Moore 2, nw of Starks, 1-8s-13w, testing 7020 ft. Republic's Sabine Tram 1, w of Starks, 25-8s-14w, cutting and pulling 9670 ft. Union Sulphur's American Oil and Sulphur Co. 1, s of Sulphur, 16-10s-10w, dr shale 7707 ft.

CAMERON PARISH—Humble's Miami Corp. 1, Catfish Lake area, 8-14s-5w, dr shale 10,133 ft. Superior's State 1, in Gulf of Mexico, 4-15s-8w, dr shale 7300 ft.

EAST BATON ROUGE PARISH—Cavalier's Elliott 1, Hope Villa area, 3-8s-2e, sd 7678 ft.

IBERIA PARISH—Texas Co.'s State 2-B, Vermillion Bay, 20-15s-6e, pb and sd tr at 5788 ft, dr shale 5876 ft.

JEFFERSON DAVIS PARISH—Continental's Fay 1, se of South Roanoke, 31-10s-3w, dr shale 9868 ft. Humble's Stegall 1, nw of Welsh, 20-9s-5w, dr shale 7982 ft. Union Sulphur's Calcasieu National Bank 1, e of Woodlawn, 12-9s-8w, testing 8295 ft.

LAFOURCHE PARISH—Amerada-L. L. E.'s South Coast 1, Raceland area, 34-15s-19e, woc 10,314 ft. Gulf's State PP 3, Timbalier Bay, 36-23s-21e, testing 7000 feet.

ST. BERNARD PARISH—Gulf's State 2 RR, Lake Borgne, 39-14s-15e, dr shale 4833 ft.

ST. MARTIN PARISH—Shell's Frederick

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1, Arnaudville area, 38-8s-5e, dr shale and lime 8364 ft. Shell-Tide Water's Unit 1, Lake Verrett area, 11-14s-12e, dr shale 2212 ft. Texas Co.'s St. Martin Land Co. 10, Henderson, 15-8s-7e, abn 9145 ft.

ST. MARY PARISH—Shell's Barbour 1, Glenwild area, 21-15s-12e, dr shale 9467 ft. Texas Co.'s State 1, Bateman Lake area, 21-16s-12e, testing at 10,905 ft.

TERREBONNE PARISH—Fohs and Delarge Oil Co.'s Buckley 1, Dulac area, 77-19s-17e, lcn.

## EAST TEXAS

ANDERSON COUNTY—Humble's Southern Pine 1-C (210-ac), John Morton sur, 2 mi ne Jarvis, elev 339 ft, top Woodbine 4284 ft, top Georgetown 5040 ft, top lst anhydrite 7400 ft, massive anhydrite 7615-7793 ft, broken to 7828 ft, top Travis Peak 8895 ft, dr 8930 ft. H. L. Parsons et al's H. B. Hemby 1 (213-ac), John Gossett sur, 7 mi ne Navarro, elev 263 ft, Pecan chalk 4063-4235 ft, top Austin chalk 4985 ft, coring 5400 ft.

BOWIE COUNTY—King Oil Corp.'s W. W. Ames 1, J. A. Talbot sur, 4½ mi nw Texarkana, elev 362 ft, sd 200 ft.

CHEROKEE COUNTY—Merica Oil Co.-W. L. Stone's Cherokee Dev. Co. 1, A. J. Acker sur, 2 mi e Maydelle, dk.

DALLAS COUNTY—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi e Grapevine, sd 807 ft. Plaza Oil Co.-W. A. Brooks, Jr.'s B. J. Davidson 1 (75-ac), ¾-mi n of Seagoville, mim.

DELTA COUNTY—O. W. Killam et al's Delta Farming Assn. 1, J. Dollahite sur, 4 mi ne Sulphur Bluff, elev 348 ft, top Woodbine 2712 ft, sd 2920 ft.

GREGG COUNTY—Humble & Gulf's E. D. Robertson 1 (11.4-ac), M. Mann sur, 2¼ mi w by s of Longview, 4 mi e production, elev 272 ft, Austin chalk 3202-3341 ft, top Georgetown 3341 ft, top Paluxy 4541 ft, top lst Glen Rose 4876 ft, top anhydrite stringer 5617 ft, massive anhydrite 6214-6532 ft, top Travis Peak 7325 ft, est 250,000 ft gas on drill stem test at 7529-78 ft, coring 7590 ft.

HENDERSON COUNTY—E. B. LaRue et al's Breedlove-Mills 1 (232½-ac), J. Dunn sur, 5 mi nw LaRue, elev 485 ft, Pecan chalk 1906-70 ft, dr 2400 ft.

HOPKINS COUNTY — Goldston-Normandie Oil Corp.'s H. J. Smith 10 (450-ac), J. A. Craft sur, sub-Trinity test, Sulphur Bluff field, top Paluxy pay 4499 ft, dr 4515 ft.

LAMAR COUNTY—Cooper Bros. et al's L. B. Hayes 1, Luke Roberts sur, 1½ mi w Deport, elev 410 ft, sd 123 ft.

LIMESTONE COUNTY—Pure's Kendrick 16-T (96-ac), Mexia field, elev 508 ft, top Georgetown 3365 ft, top 1st Glen Rose 4270 ft, top broken anhydrite 5132 ft, Travis Peak series 5656-7676 ft, top lower Marine 7676 ft, td 8847 ft, cutting out drill pipe. Stanolind & Ramsey Pet. Corp.'s T. Norris 1 (40-ac), K. Thrasher sur, 5 mi n Kosse and on Thornton fault, elev 528 ft, Austin chalk 2791-2890 ft, top Woodbine 2980 ft, top Georgetown 3255 ft, top 1st Glen Rose 4026 ft, top 1st anhydrite 4886 ft, top Pettit 5375 ft, top Travis Peak 5523 ft, dr 6980 ft.

NAVARRO COUNTY—Mrs. Jane Robinson et al's Fortson Bros. 1, Eli Smith sur, 5 mi ne Corsicana, elev 345 ft, Austin chalk 1346-1585 ft, dr 1890 ft. Tom Sharp et al's E. B. McDowell 1 (65-ac), T. J. Jordan sur, ½ mi s Bazette, Pecan chalk 1980-2005 ft, Austin chalk 2835-2935 ft, sd 2970 ft.

TITUS COUNTY—A. D. Lloyd et al's J. M. Sikes 1, Joseph Matthews sur, 1½ mi n Winfield, elevation 385 ft, cem surface pipe.

UPSHUR COUNTY—Tom Hunter & American Liberty Oil Co.'s Dr. Chas. Carter 1 (80-ac), J. H. Fields sur, 1½ mi n Kelsey, Trinity test, elev 428 ft, top broken Pecan chalk 2250 ft, top hard chalk 2370 ft, top Austin chalk 3110 ft, dr 3150 ft. L. & G. Oil Co.'s Henry Williams 1 (315-ac), L. S. Von Roeder sur, 2 mi nw Gracetown, elev 304 ft, rig.

## WEST TEXAS

(This report is confined to the north portion of the Permian basin.)

ANDREWS COUNTY—Gulf's University 1-G, ne ne nw sec 8, blk 14, elev 3208 ft, top anhydrite 1700 ft, gas blowout in Yates sand 2997 ft, show o&g 4290-95 ft, dry and abd 4518 ft. Olney S. Black et al's O. B. Holt-Sun 1, c nw nw PSL sec D, blk 43, lcn. Wm. F. Hannigan et al's University-Stanolind 1, nwc sec 7, blk 9, lcn. Honolulu Oil Corp.'s J. E. Parker 1-6, ne ne nw PSL sec 6, blk A-44, elev 3212 ft, top anhydrite 1960 ft, top lime 4160 ft, cem 7-in-csg, td 4520 ft. Seaboard Oil Corp. et al's Munger-Nix 1, c ne¼ PSL sec 1, blk A-41, rur, td 200 ft.

BAILEY COUNTY—Geo. Etz et al's I. C. Enochs 1, c labor 66, league 182, Floyd C. S. L. sur, elev 3788 ft, top lime 3173 ft, sd in water 4160 ft.

BORDEN COUNTY—Continental's Clayton-Johnson 1-A, NWc of T&P Ry sec 27, blk 32, T-4-N, elev 2534 ft, dr by bailer, td 2795 ft.

COCHRAN COUNTY—M. S. Ingleright & E. E. Fogelson's Mrs. N. H. Tarver 2, near sec labor 14, league 55, Oldham C.S.L. sur, dr 4010 ft. J. R. Meeker et al's Wright 1, nwc sw labor 26, league 96, Mills C.S.L. sur, elev 3774 ft, top anhydrite 2330 ft, dr 4125 ft.

FLOYD COUNTY—Mills Bennett Prod. Co.'s Montgomery 1, nec F. J. Latham sur No. 2, A-520, dr 3265 ft.

GAINES COUNTY—American Liberty Oil Co.'s W. N. Willard 1, swc of PSL sec 38, blk AX, saturated lime 4962-5000 ft, run 7-in csg. Amerada's T. S. Riley 1, c se se of W. T. Ry. sec 229, blk G, elev 3333 ft, cem surface pipe; J. B. Robertson 1, c sw sw of W. T. Ry. sec 196, blk G, elev 3353 ft, dr 1640 ft. Fay Boren & Chas. Everst's T. H. Sneed 1, sw¼ of W. T. Ry. sec 282, blk G, lcn. Amon G. Carter et al's E. C. Brand 1, sec PSL sec 54, blk AX, lcn abd; E. C. Brand 2, nec se sec 54, elev 3576 ft, top anhydrite 2145 ft, logged soft lime 4919-60 and 4971-88 ft, sul w with trace oil 4995 ft, dry and abd 5014 ft. Continental's E. H. Jones 2, c se ne PSL sec 1, blk A-8, elev 3632 ft, top anhydrite 2011 ft, top salt 2060 ft, top Yates 2990 ft, top brown lime 4646 ft, dry and abd 4975 ft; A. L. Wasson 1-B-53, nec se¼ PSL sec 53, blk AX, dr 4445 ft. Conoco-Amon G. Carter's A. L. Wasson 2, nec PSL sec 48, blk AX, dr plugs 4806 ft; Wasson 3, sec 48, td 4982 ft, flowed 27 bbls per hr 12 hrs, with 513,000 ft gas, testing; Wasson 4, swc sec 48, td 4974 ft, flowed 3 bbls per hr, with 1,300,000 ft gas via csg with dp in hole, run tubing. Ohio's S. J. Averitt 2, c sw ne of W. T. Ry. sec 228, blk G, rur. Mitchell & Sullivan's T. S. Riley-Shell 1, c ne ne sec 447, blk G, CCSD&RGNG sur, elev 3533 ft, top anhydrite 2300 ft, top lime (est) 5250 ft, dry and abd, no water, 5302 ft. Phillips Pet. Co.-I.T.I.O. Co.'s T. S. Riley 1, nws sec 345, blk G, dr 3180 ft. Plymouth, Carter & Conoco's H. Giesecke 1, nwc labor 1, league 296, Reagan C.S.L. sur, elev 3115 ft, sd 2130 ft. Shell's R. A. Cox 1, nec sec 380, blk G, CCSD&RGNG sur, elev 3537 ft, top anhydrite 2040 ft, swabbed 95 percent sul w at 4995 ft, pb to 4968 ft, testing for water source; G. N. Robertson 1, nwc ne¼ sec 344, blk G, dr 2310 ft.

GARZA COUNTY—M. L. Richards et al's J. B. Slaughter 1, se se se of T. T. Ry. sec 5, blk 8, elev 2870 ft, sd 2950 ft.

HOCKLEY COUNTY—Texas Co.'s Bob Slaughter Blk. 2 (6219-ac), sec labor 92, Zavalla C.S.L. sur, league 37, elev 3531 ft, top anhydrite 2222 ft, dr lime 4875 ft. Sid W. Richardson et al's Slaughter 1, swc labor 59, league 39, Maverick C.S.L. sur, td 50 ft, rur.

LYNN COUNTY—C. H. Hutto et al's Brownfield 1, near c of E.R.&R.R.Co. sec 6, blk A-1, cored show oil 686½-87 ft, sd to run 3-in pipe.

MARTIN COUNTY—Harris-Anderson Corp's Mrs. M. Robinson 1, c sw¼ of T&P Ry sec 33, blk 36, T-1-N, dr 3615 ft.

LAMB COUNTY—American Liberty Oil Co., T. L. Wynne, Tr.'s A. Neunschwander 1, 660 ft out of sec labor 1, league 660, Capitol Lands, mim.

YOAKUM COUNTY—American Liberty Oil Co.'s C. A. Thomas 1, near nws sw sec 864, blk D, J. H. Gibson sur, elev 3592 ft, top Yates 2975 ft, td 5026 ft, used 1000 gals acid, flowed 210 bbls initial, complete; Fairman 1, c se ne sec 797, blk G, elev 3627 ft, cem sur csg; Fairman 2, 3 & 4, lcns. Denver Producing & Ref. Co.'s J. A. Whittenburg Est. 2, c ne ne sec 381, blk D, elev 3623 ft, show gas 4850 ft, sd repairs 4874 ft; Whittenburg Est 2-A, c ne nw sec 830, blk D, top anhydrite 2220 ft, dr 2850 ft. Honolulu Oil Corp.'s R. E. Bennett 2, ne se ne sec 677, blk D, top anhydrite 2360 ft, lime pay 5001-5247 ft, used 1000 gals and 4000 gals acid, flowed 30 bbls oil per; Bennett 3, top anhydrite 2360 ft, top Yates 3090 ft, dr 4830 ft. J. W. Murchison & L. Fikes' M. B. Sawyer 1, c sw se sec 702, blk D, elev 3623 ft, top anhydrite 2256 ft, top 1st lime 4100 ft, top solid lime 4665 ft, dr 4830 ft. Ohio Oil Co.'s L. N. Clawater 1, c nw nw sec 638, blk G, rur; Fairman 1, c se se sec 797, blk G, lcn. Phillips Drl. Co. et al's W. A. O'Brien 1, nec sec 441, blk D, lcn. E. H. Pitkin & Lou Stogner's J. A. Blades 1, ce ne ne sec 103, blk D, elev 3851 ft, top anhydrite 2393 ft, top Yates 3230 ft, top solid lime 4460 ft, cored little oil stain 5204-15 ft, coring hard lime 5261 ft. Shell's Geo. Baumgart 1, sw¼ sec 828, blk D, elev 3587 ft, top anhydrite 2200 ft, top Yates 3020 ft, top solid lime 4470 ft, td 5000 ft, used 4000 gals acid and flowed 380 bbls oil 30 hrs; Ruth Bennett 1, ne se ne sec 677, blk D, top brown lime 4662 ft, dr 5160 ft; J. H. Lynn 1, c sw sw sec 798, blk D, elev 3623 ft, dr 4700 ft. Skelly-Sun's J. A. Kiser 1, c ne ne sec 640, blk D, elev 3657 ft, top anhydrite 2183 ft, base salt 2890 ft, top Yates 2980 ft, top brown lime 4045 ft, top solid lime 4540 ft, pb fr sul water at 5300 ft to 5221 ft, tested water with show oil, dry


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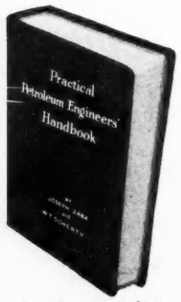


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and abd. Standard (Tex)'s M. B. Sawyer 1, c se se sec 576, blk D, elev 3669 ft, shot 1000 qts nitro 5403 ft, tested lots water, pb to 5269 ft, tested water with show oil and dry and abd. Sun's J. H. Lynn 1, c ne ne sec 798, blk G, rur. T. P. Coal & Oil Co.'s Ruth Bennett 3, swc nw¼ sec 678, blk D, dr 2250 ft. Texas Co.'s N. W. Willard 1, c sw sw sec 799, blk G, elev (gr) 3600 ft, dr 1350 ft; Willard 2, c nw nw sec 799, elev 3613 ft, dr 300 ft. Pete N. Wiggins, Jr., et al's Bartlett 1, nec sec 359, blk D, elev 3780 ft, top anhydrite 2320 ft, top gray lime 4558 ft, no shows, abd 5508 ft.

## SOUTH TEXAS

### SAN ANTONIO DISTRICT

ATASCOSA COUNTY—Stieren's Crawford 1, Crawford sur, re-dr 3476 ft.

BASTROP COUNTY—Bibb's Lentz 1, Wilkinson sur, sd 2550 ft. Southern Cross' Smith 1, Blalock sur, laying wtr line, drk up.

BEXAR COUNTY—Fair's Medina Irr. Farm 1, blk 55, ru. Hickok & Reynolds' Ewert 1, York sur, sp & dr wtr well. Rosenburg's Carle 1, Rolen sur, dr 235 ft.

CALDWELL COUNTY—Brady & Pummel's Jackson 1, Morris sur, sd 2350 ft. Mac-Wag-Tree's Roberts 1, House sur, dr 1500 ft.

DIMMITT COUNTY—Teas & Maryland's McKnight 1, I & GN RR sur, dr 5410 ft.

EDWARDS COUNTY—Carter's Sweeten 1, GC & SF sur, sd 5112 ft. Evans & Love's Brown 1, GWT & P sur, dr 4006 ft.

GUADALUPE COUNTY—Blanco & Buchanan's Howell 1, Darst sur, dr 1875 ft. Kallison's Burris 1, Nash sur, dr 1985 ft; Howell 1, Nash sur, sd 3000 ft. Housel's Carter 2, Highsmith sur, sd 2315 ft.

KENDALL COUNTY—Landon & Holifield's Sidensticker 1, Rodriguez sur, dr 610 ft.

MEDINA COUNTY—Walker's Riff 1, Hans sur, sd 990 ft.

WILLIAMSON COUNTY—Aldridge's Kroschewsky 1, Parrass sur, lcn.


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WILSON COUNTY — Patticio's Keller 1, Karnes county School Lands sur, sd 1235 ft. Richardson's Heirholzer 1, ds stuck below 927 ft., skid over for new hole.

ZAVALA COUNTY — Wilcox's Gilliam 2, GWT & P sec, bailed down 3977 ft, rec 4 blrs sul/wtr per hour, unable to lower fluid 600 ft off btm, will dr & test 1 ft at a time.

### LAREDO DISTRICT

DUVAL COUNTY—Dovre's Hagist 1, sec 265, mim. C. K. Gravis' Fredrick 1, Gibson sur, dr 480 ft. Frank Gravis' Vaello 1-A, San Andres gr, dr 5825 ft. Magnolia's DCRC 1, sur 61, 10 in. sur/csg 168 ft; Lopez 1, sur 82, dr 2450 ft. Rudco's Ellis 1, sec 308, ran elec. formation tester 2975 ft, set csg, dr plugs, will perf in snd 2072-91 ft (180 ft below Chernoskey).

JIM HOGG COUNTY—Darby's Holbein 2-B, sec 7, testing 1806-28 ft. French's Garza 7, sur 269, set 5½ in. at 1047 ft, wocs, oil snd 1038-54 ft.

LASALLE COUNTY—Reed's Yeager 1, sur 39, dr 1810 ft.

McMULLEN COUNTY—Coyle's Two Rivers Ranch 1, sec 60, stdg 740 ft, snds 500 and 700 ft showed sw. Rowan & Nichols' Rhode 2, sec 21, lcn.

STARR COUNTY—Collins' Guerra 1, sh 8, tried to blow out 6230 ft Lowe & Ely's Gonzales 1, por 72, dr 630 ft.

WEBB COUNTY—Boysen & Jones' Watkins Ranch 1, sec 20, mim. Killam's Bruni 4, sur 585, coring 2920 ft. Magnolia's Sprague-Fee, sec 2161, r u. Moore's Garcia-Villareal 1, sur 337, dr plugs 1927 ft. Mortimer's Welhausen 1, sur 73, coring 2506 ft.

ZAPATA COUNTY—Bob's Martinez 2, Duke subd, sd 990 ft. Brown's Gutierrez 1, Cullinan subd, dr 475 ft.

### CORPUS CHRISTI DISTRICT

ARANSAS COUNTY—Atlantic's Porterfield 1-C, McCampbell subd, TD 8889 ft, sd/54 5738 ft.

BEE COUNTY—Jones, Russell, & Booe's Ruhman 1, Thurston sur, lcn.

BROOKS COUNTY—Standard of Texas' Mestina 3, (Lse 2) share 11 cored oil snd 2717-27, testing 2727 ft.

GOLIAD COUNTY—Goliad's Cole 1-A, Goliad townsite, perf 5380-90 ft w/10 shots, 5560-65 ft w/5 shots, 5552-57 ft w/15 shots, wshd, sprayed some oil w/400 pounds, went dead, wshg again. Standard of Texas' Williams 1, Williams sur, sp. Swiger's Wood 1-B, Shearn sur, td 5048 ft, perf 5009-14 ft swabbing 3 bph, clean oil, no sw.

HIDALGO COUNTY—Atlantic's McCalip 1, sec 175, fsg 8965 ft, circulating w/oil. Gulf States' Delta Orchards 2, sec 94, td 7960-ft, perf abt 7865-75, testing. Y & B's Waite Bros 1, sh 382, dr 5869 ft.

JACKSON COUNTY—Harrison's Meyer 1, York sur, coring 5820 ft. Magnolia's West 1, Musquiz sur, dr 2475 ft.

JIM WELLS COUNTY—Hill's Kuether 1, sur 235, sd 3271 ft. Howell's Talbert 1, La Vaca gr, stdg 5530 ft. Smith & Storey's McGill 2, sur 98, wocs 2138 ft. Southern Minerals' Hawkins 1, sh 3, San Diego de Abajo gr, lcn.

KENEDY COUNTY — Sal Vieja's Garcia Land & Cattle 1, sh 59, prep to dr ahead from 8515 ft.

KLEBERG COUNTY—Magnolia's Dietz 1, sec 7, dr 2490 ft. Pure's State of Texas 1, tr 522, prep to dredge canal. Superior's Koch 1, sec 26, dr 6521 ft.

LIVE OAK COUNTY—Chew & Hantho-Nelson's Bell 1, Parks sur, dr 1565 ft. Hannah's Wedding 1, Haughy sur, sd 1975 weather. Jones' West est 1, Baris sur, dr 2265 ft. Loma's Pfluger 1, Turner sur, dr 1225 ft; Striddle 1, Turner sur, drk. Martin's Great Southern Life 1, sec 25, dr 225 ft. Rancho's Fee 1, sur 3, dr 3540 ft.

NUECES COUNTY—Douglas McKinzie 1, sur 419, dr 5130 ft. Richardson's Chapman 1, sec 43, set casing, td 5424 ft. Southern Mineral's King 4, sec 6, mir; Ida Walker 1, sec 40, coring 6127 ft. Texon's Horne 1, Palo Alto gr, drk. Union's Galladay 1, Agua Dulce gr, coring 6175 ft; Simmonds 1, Agua Dulce gr, coring 7155 ft.

REFUGIO COUNTY—Hogan's Kelly 1, Power sur, pb from 6437 ft to test 6000-ft snd, wocs, tstd sw through perfs 6244-55 ft.

SAN PATRICIO COUNTY—Bob's Green 2, Williamson sur, sd 6195 ft. Conroe's Dougherty 1, McGloin sur, sd 800 ft. Plymouth's Brigham 1, sec 62 ru. Rutherford's George 1, Saddler & Garcia sur, dr 7096 ft. Schwab's Lane 1, sec 12-A, sd 1433 ft, high wtr.

VICTORIA COUNTY—Bowles' Robertson 1, Burnham sur, sd 6318 ft, woo in sd/tr hole 5643 ft. Echols' Dunseth 1, Perez sur, ru Gulf's Bonner 1, Galban sur, wocs 5487 ft.

WILLACY COUNTY—Magnolia's Armendiaz 1, sh 4, dr ahead 7145 ft.

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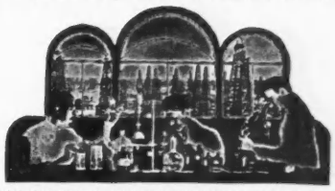

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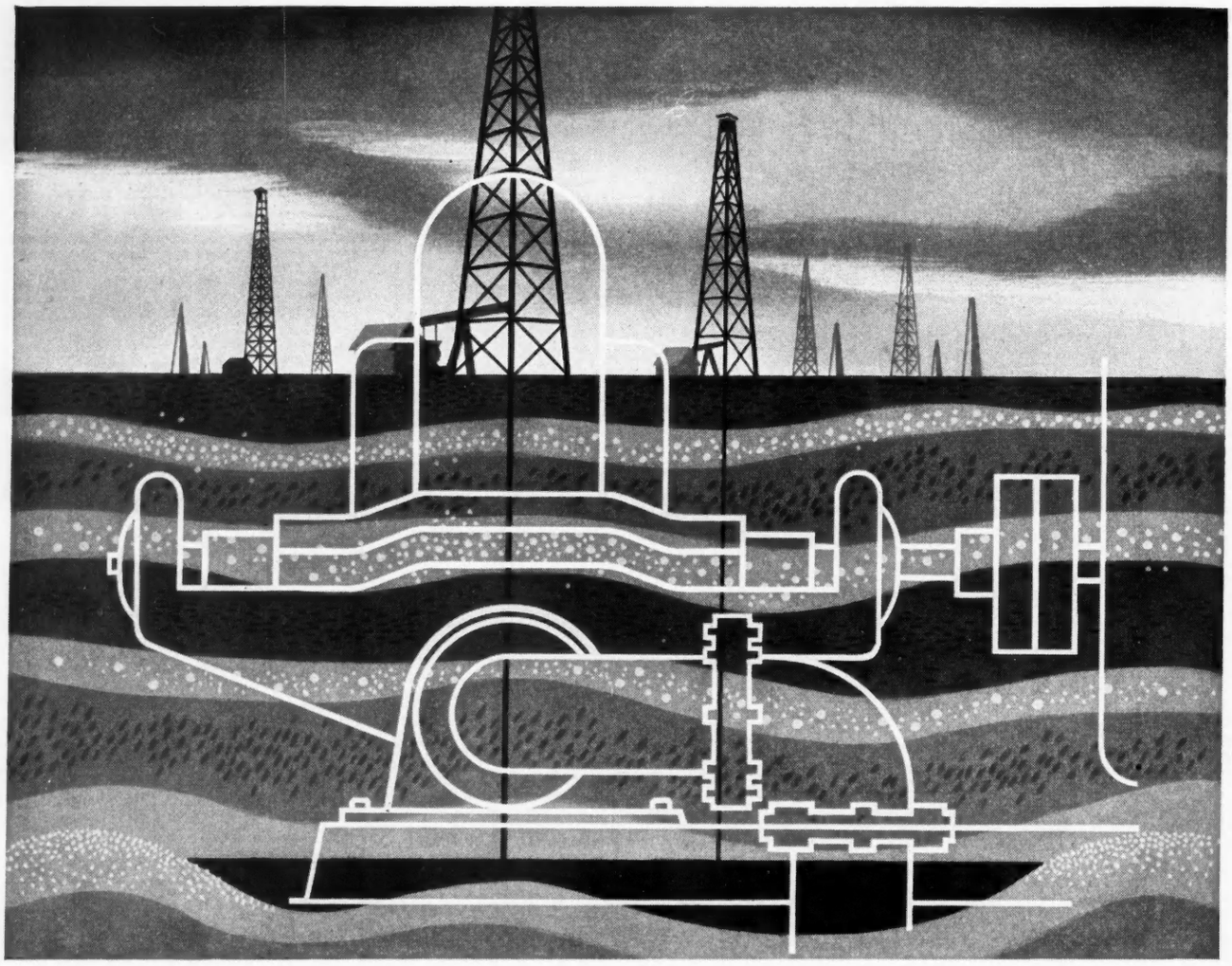

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*Our technical book, "Molybdenum," contains practical data on Moly irons and steels. It will be sent on request — as will our monthly news-sheet, "The Moly Matrix." Be free to consult our laboratory on special ferrous problems. Climax Molybdenum Company, 500 Fifth Avenue, New York City.*

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

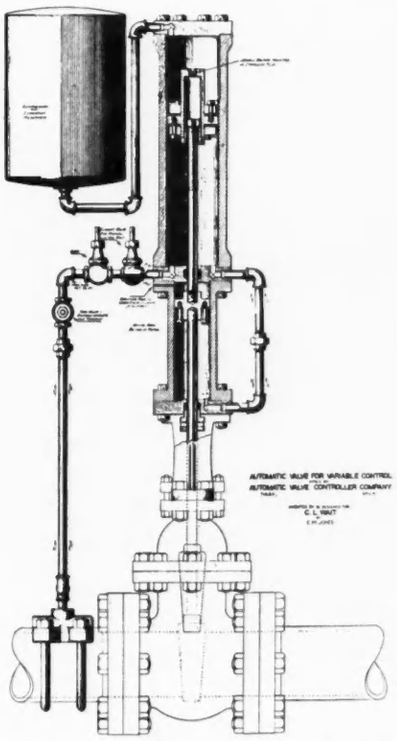
**Climax Mo-lyb-den-um Company**

MOLY

# NEW PRODUCTS FOR THE FIELD
## Machinery • Tools • Equipment

### AUTOMATIC VALVE CONTROL
**The Automatic Valve Controller Company**

The Automatic Valve Controller Company, Cosden Building, Tulsa, has placed on the market an automatic valve control which handles various loads above 25 pounds in gas and liquid pipe lines.

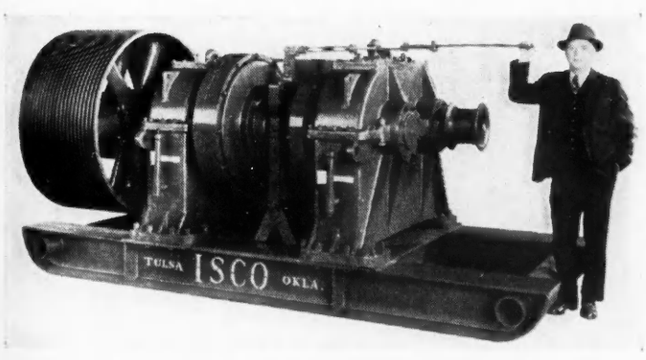


**Automatic Valve for Variable Control**

This control remains open during normal demand and automatically closes when sudden drops of pressure occur, keeping the valve closed until pumping is resumed. Provision has been made to keep the line from closing during a slow decrease in the pressure line due to normal demand. The control is adaptable to every pipe line need under all conditions; single and double lines and river crossings.

### REVERSE CLUTCH
**International Supply Company**

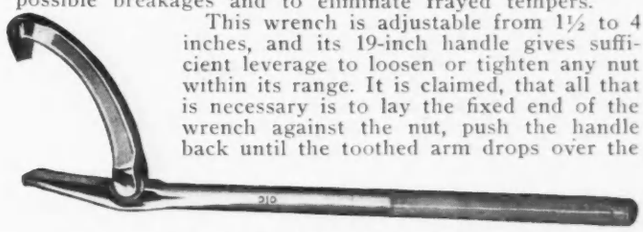
International Supply Company, Tulsa, announces a reverse clutch of welded construction with heavy, structural steel base, semi-steel ribbed cases, hammer forged SAE chrome nickel roller bearing steel shafts and cast SAE alloy steel herring-bone gears. The forward drive is by 2½-inch triple roller chain. It has only one light weight double cam, limited movement, adjustable friction plates, bayonet type guages for checking oil level and oil bath lubrication of all moving parts. Sprockets are cut tooth forged steel, reverse and neutral positions are pivoted on ball bearings. Operating lever and clutch yoke are Alemite lubricated. There is a single forward lever control.




**International Supply Reverse Clutch**

### SPANNER WRENCH
**Owatonna Tool Company**

Owatonna Tool Company, Owatonna, Minnesota, recently placed on the market the No. 885 heavy duty spanner wrench, which has been designed to avoid a long range of possible breakages and to eliminate frayed tempers.



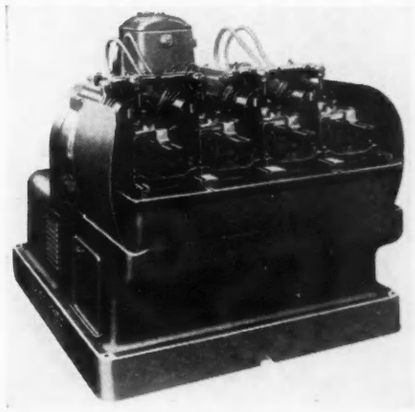
This wrench is adjustable from 1½ to 4 inches, and its 19-inch handle gives sufficient leverage to loosen or tighten any nut within its range. It is claimed, that all that is necessary is to lay the fixed end of the wrench against the nut, push the handle back until the toothed arm drops over the other side and then pull away. Differential turret nuts, pinion bearings, exhaust pipe lock nuts, packing and flange nuts are claimed to come off or go with a minimum of effort or time.

**Owatonna Spanner Wrench**

### THREADING MACHINE
**Landis Machine Company**

Landis Machine Company, Waynesboro, Pennsylvania, announces a new four-spindle threading machine to supplement its present line of thread cutting die heads and threading machines.

The four-spindle threading machine is of the semi-automatic type in which the movement of the die head spindles and the opening of the grips is actuated by cams. The operating cycle of this machine reduces the manual labor to merely placing and removing the work from the grips.



**Landis Four-Spindle Threading Machine**

The four die head spindles are closely coupled, making it unnecessary for the operator to move from one position to place the work in any pair of grips. The cycle of the machine is controlled from a fully enclosed pick off gear box located at the rear. The gear train is compact in design and is sturdily constructed.

The die head spindle is mounted on anti-friction bearings and has both rotary and sliding action in its housing. The forward movement of the spindle is actuated by a spring

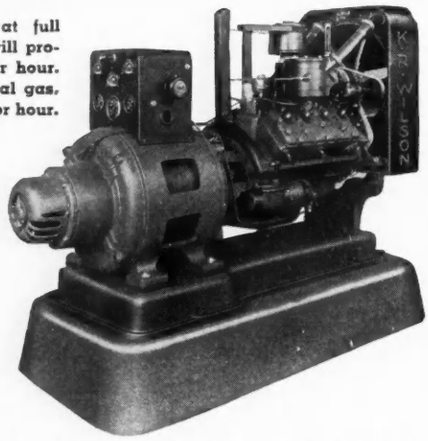
# KRW-FORD V-8 ELECTRIC PLANT

**This Unit, operating at full load on 10c gasoline will produce 20 KW for 45c per hour. Operating on 30c natural gas, 16 KW costs only 13c per hour.**

PRODUCES BOTH 110 AND 220 VOLT CURRENT FOR LIGHT AND POWER

20,000 WATT CAPACITY

Operates at 1800 R.P.M.




Powered with brand new **Ford V-8, 85 H.P.** engine, with light weight steel pistons and cast iron heads—Six-blade, 19" Fan with double belt drive—**Ford Air Filter** with crank case ventilator—**Battery, starter, Generator—Temperature Gauge** and **Temperature Control** which breaks ignition circuit if water temperature exceeds 200 degrees—Bus size **Fram Oil Rectifier** saves 75% of lubrication costs, insures long engine life—Improved **Pierce Governor** with double "V" belt drive.

**Generator** is of special design and extremely efficient. Armature is perfectly balanced and runs on large, heavy duty, Ball Bearings—**Exciter** is built-in. (3 Phase, also DC if desired). Cast Aluminum **Instrument Panel** includes **Tachometer—Oil Pressure** and **Oil Temperature Gauges—Ignition Switch Lock**—Starter **Push Button**—Hand **Rheostat** for generator control.

**For complete information, prices and data write us.** You can buy through your local Ford Dealer and benefit by local service and low-cost Ford engine replacement feature.

## K. R. WILSON, 20 Lock St., Buffalo, N. Y.

---

# RELY *on* LUDLOW

FOR VALVES that stand up — year after year — rely on Ludlow. Ludlow installations on oil and gas lines may be depended on for years of trouble-free performance.

Rely on Ludlow, too, for the right valve for any job. Whether standard or special types — every Ludlow valve is carefully constructed throughout of finest materials. Write Ludlow for complete information.

## The LUDLOW VALVE MFG. CO.
TROY, NEW YORK


which moves the die head under a heavy starting pressure, until one or two threads are cut and after which a lighter or follow up pressure is applied and exerted from two or three threads. The starting mechanism is unique in that it assimilates the actual movements of an operator in starting work into a die head.

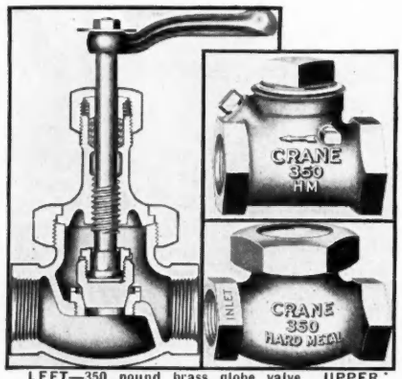
The gripper jaws are opened by a rod and lever mechanism which is operated by the same cam that returns the die head. The grip jaws dwell in an open position at sufficient time to permit the operator to lay the work in the grips after which the opening pressure is removed and the grips close on the work under spring pressure. The gripper jaw housing is adjustable in relation to the face of the die head for various thread lengths and adjustable stop which also supports the head of the bolt is provided to locate bolts of different lengths in the grips.

The machine employs a five horsepower motor mounted within the bed of the machine. A large screened-in coolant reservoir and a rotary gear pump provide a sufficient volume of cutting coolant to the dies at all times.

## BRASS VALVES

### Crane Company

Crane Company, 836 S. Michigan Avenue, Chicago, offers a new line of brass screwed end globe and check valves for 350 pounds steam pressure at 550 degrees temperature. These valves are designed especially for high pressure steam lines used on oil and gas field boilers for deep well drilling operations. They also may be used on non-shock cold water, oil or gas lines up to 1000 pounds. Their sizes range from ½-inch to 2 inches.




LEFT—350 pound brass globe valve. UPPER RIGHT—350 pound brass swing check valve. LOWER RIGHT—350 pound brass lift check valve.

The globe pattern brass valve (62-P) is of the union bonnet design (except the 2-inch which has a bolted bonnet) and has Crane nickel alloy plug type disc and Exelloy body seat ring. The stuffing box is supplied with a gland and is filled with high grade packing which may be replenished when the valve is wide open and under pressure.

The horizontal lift check valve also has a union bonnet except the 2-inch, which has a bolted cap. Discs are of the piston-guided type and seats are renewable screwed in rings of Crane nickel alloy. The horizontal swing check valve (No. 78-E) which may be used either for horizontal or upward flow, has screwed cap and tapped hole in the body to facilitate regrinding of the disc.

## ARC WELDER

### The Hobart Brothers Company

The Hobart Brothers Company, Troy, Ohio, announces a "Junior Model" 200 ampere gasoline engine driven arc welder, to meet the demand for a unit of small size and light weight. According to the manufacturer, this model is popular for installation on emergency service trucks and is being used for various purposes where the work involved does not call for the larger engine.

It is a completely equipped, factory-built outfit on sturdy steel skids, with complete canopy enclosure with hinged side panels that fold up over the top and can be padlocked when closed. Equipment includes electric self starter, battery ignition with generator, built in fuel pump, air filter, fuel filter, variable speed governor, sectional steel radiator, built in fuel tank and other engine equipment as furnished with larger Hobart machines.

The welding generator is provided with Hobart's exclusive remote control, polarity switch, built in exciter, dual control and other features exactly the same as in larger outfits.

# This Week with the Industry's EQUIPMENT SUPPLIERS

## Miner Elected Vice President By Atlas Lumnite

Atlas Lumnite Cement Company, New York City, recently announced the election of Joshua L. Miner, technical director, as vice president and director, succeeding Major C. R. Hulsart, deceased.

Miner joined the Universal Atlas organization in 1922. He has been identified with the Lumnite company from its beginning, starting in 1924 as a salesman and later in charge of sales. In 1929 he went to Europe where he studied use of similar cements. The following year he became technical director of the company.

He was graduated from Lafayette College and entered the employ of the Alpha Portland Cement Company as chemist. From 1907 to 1910 he was a lecturer on cement and in charge of the cement and concrete laboratories, civil engineering department, Lafayette College. Later he was manager, Dallas and New York offices, Pittsburgh Testing Laboratory; Chief of Inspection, Purchase Storage and Traffic Division, General Staff, U. S. Army, 1918, and manager of the Brooklyn Crozite Brick Company.

Miner is a member of the American Society for Testing Materials, the American Concrete Institute and the Highway Research Board of the National Research Council.

## Howard Supply Company Distributor for Kibele

Kibele Manufacturing Company, Dallas, Texas, recently announced appointment of Howard Supply Company, 5125 Santa Fe Avenue, Los Angeles, as distributors of its products on the Pacific Coast.

H. E. Howard is president of the California supply company and L. George Trembly is vice president and sales manager.

## Large O.C.S. Pumping Unit Lifts 3,500 Barrels Fluid Daily

O.C.S. Manufacturing Company, Coffeyville, Kansas, recently installed a 100 horsepower Bat pumping unit for Lake Oil Company in the Bebee pool, near Ada, Oklahoma.

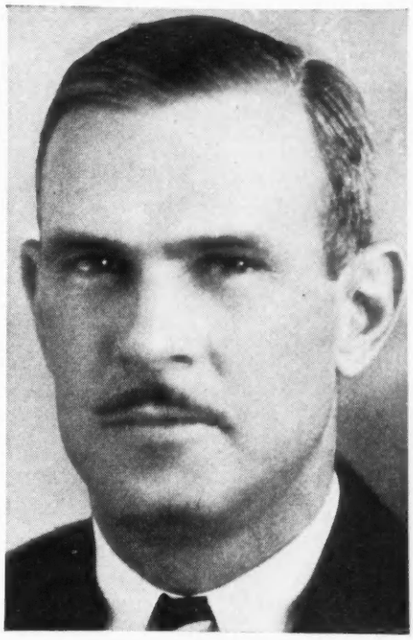
Before the unit was installed, the well pumped 3,180 barrels of fluid per day, which has been increased to 3,500 barrels. The well is pumping 20, 74-inch strokes per minute, and a full string of 1-inch rod is used. Installation of this unit has increased production 20 barrels per day.

## Tulsa Exposition Planning Finest Safety Program

Safety Day at the Tenth International Petroleum Exposition at Tulsa, will be Friday, May 20.

J. D. McCamey, director of safety for The Carter Oil Company, Tulsa, and chairman of the exposition Safety Committee, has announced that L. E. Jennings, Stanolind Pipe Line Company; F. K. Dalrymple, Tide Water Oil Company; Kraus Erhart, The Texas Company; R. S. Huffman, Oklahoma Natural Gas Company; T. A. Lyttle, Cities Service Oil Company; H. T. Markee, Phillips Petroleum Company; E. D. Murphy, and J. H. Savage, Mid-Continent Petroleum Corporation; D. J. Wallace, Sinclair Prairie Oil Company; J. C. Young, Tide Water Oil Company, and H. H. Myers, Sinclair Prairie Oil Company, will serve on the general committee of the committee for safety activities at the oil show in Tulsa.

McCamey has stated that the Safety Day program at the 1938 Oil Show will be the finest ever produced before an International Petroleum Exposition audience.



**J. D. McCAMEY**

**Director of Safety for The Carter Oil Company, has been appointed chairman of the safety committee for the International Petroleum Exposition at Tulsa.**

## American Iron & Machine Opens New Kansas Branch

American Iron & Machine Works Company, Oklahoma City, Oklahoma, recently opened a new branch house at Great Bend, Kansas. The dedication of this new branch on December 10 was marked by a buffalo barbecue, which was attended by more than 2000 Kansas oil men. There was unique entertainment as well as music by the orchestra and a special dance program.

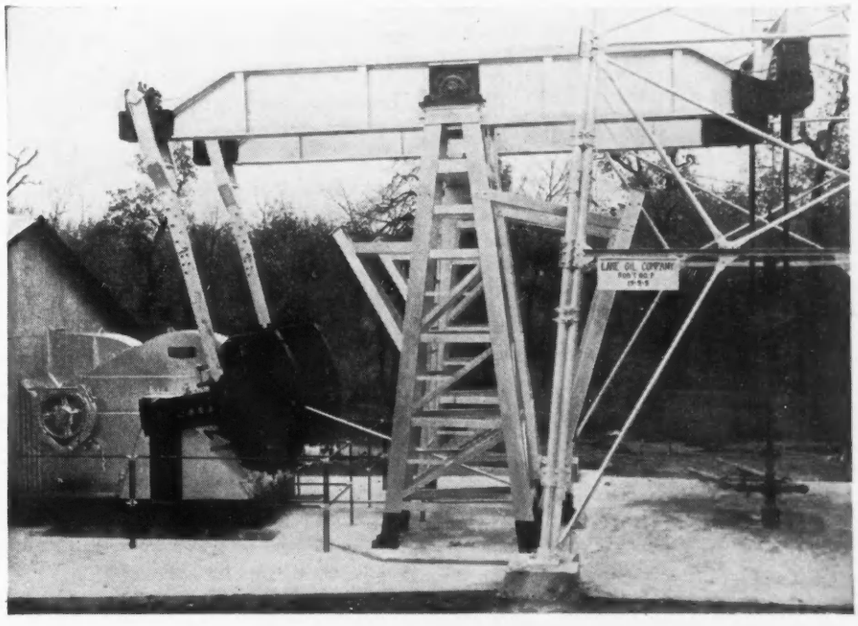
## Murphy Diesel Company Appoints G. P. Hough Sales Manager

Murphy Diesel Company, Ltd., Milwaukee, Wisconsin, announces the appointment of George P. Hough as sales manager. For the last few years he has been connected with the construction industry in the manufacture of heavy equipment.

## Railton Elected Vice President by The Ruberoid Company

The Ruberoid Company, 500 Fifth Avenue, New York, recently announced the election of E. M. Railton, formerly manager of the company's western division, as vice president and director of the corporation, succeeding T. M. Rianhard, who resigned.

Railton, a native of Chicago, has been connected with the building products industry all his working life, first with The Barrett Company, later as western manager for H. F. Watson Company which was acquired by The Ruberoid Company through merger in 1928, and since then as manager of Ruberoid's




**O.C.S. 100-Horsepower Pumping Unit**

western division with headquarters in Chicago.

From the divisional headquarters in Chicago, Railton will continue to be in general charge of operations in the company's western territory, comprising the Middle West and the region westward to the Rocky Mountains.

### Cooper-Bessemer Corporation Warehouse Opened at Pampa.

The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, recently opened a new warehouse at Pampa, Texas, to provide a source of field service and spare parts closer to the installations of equipment in that territory.

**Cooper-Bessemer Corporation Warehouse at Pampa, Texas**


# INFERNO
## *Safety Valves*

**Standard Equipment on two Well Known Boilers!**

**Two well-known boiler manufacturers have endorsed INFERNO Safety Valves** by making them standard equipment. Made in 3 types: Top Outlet, Exposed Spring Top Outlet, and side Outlet. Side Outlet type can be furnished capped for use as relief valve. All made to conform to A.S.M.E. standards. All can be set for any pressure from 10 to 500 lbs. Sealed at the set pressure so lever can be reversed without breaking the seal. Malleable iron spring cage and base. Stainless steel stem, Cadmium coated steel spring. Renewable nickel valve and seat. **Write for new BULLETIN No. 11.**

**THE INFERNO CO.**

"Makers of Better Steam Equipment"

**P. O. Box 1138** **Shreveport, La.**

Have You Taken the Peace Pledge?

**WRITE FOR INFORMATION**


### *Fifth edition of "Petroleum Facts and Figures"*

Publication of "Petroleum Facts and Figures," Fifth Edition, 1937, has been announced by the American Petroleum Institute.

The edition, which is six by nine inches in size, contains about 250 pages, and is the first to be published since 1931.

Effort has been made to incorporate in the new edition all pertinent data available regarding the industry, so that the one volume will be a complete and comprehensive work. The format has been changed to eliminate most of the text and to permit the inclusion of additional statistical data and illustrations. For the first time the volume presents pictorial graphs and charts.

Subject matter is divided into eight sections. The first, concerning utilization, shows various uses to which petroleum is put, with consumption figures by years. The chapter reveals that more than 1,750,000,000 barrels of petroleum products are consumed annually. The United States, with only 6.5 percent of the world's population, consumes 62 percent of the total.

The second chapter, covering production, shows the output of crude oil by continents, nations, states, and fields since production records first were kept. Allied subjects, such as petroleum reserves, deep drilling records, crude oil prices, and production of other products also are presented.

The third chapter deals with refining. Here the figures reveal the progress made in refining.

An insert presents one of the first complete lists of principal petroleum products to be compiled in recent years.

Transportation is covered in the fourth chapter. Here are revealed the statistical record of operation of more than 280,000 miles of pipe line, 150,000 tank cars, and thousands of tank ships and tank trucks.

Markets and prices are covered in the statistics of the fifth section, which presents a complete record of gasoline prices and taxes in 50 cities, and shows that since 1920 retail prices of motor fuel have moved to one-half their former level.

Opposite trends are shown in the sixth section, where comprehensive data on taxation disclose how heavily the petroleum industry and its customers are levied upon for the support of government. A complete record of federal and state gasoline taxes and other sales levies is presented.

The seventh, or general, section presents facts and figures on the industry's capital investment, pay rolls, earnings, etc.

The eighth section, comprising an appendix, presents complete condensed tables covering a long period of petroleum exports, imports, consumption, production, refining operations, etc. Also presented are lists showing Institute officers, board of directors, and standing and special committees; lists of petroleum and allied trade associations, both national and state; a complete list of Institute technical and other publications; and an index.

The volume contains all the pertinent statistical information presented in the first four editions of "Petroleum Facts and Figures," with all data modernized. Copies are priced at 75c per single volume, with discounts for quantity.

## BULLETINS

**Valves**

Newman, Hender & Company, Woodchester, Glos., England, recently published a 46-page bulletin describing various types of valves used for handling petroleum products, oils, water, steam, boiler blow-off, gas, etc.

**Wire Rope**

The National Supply Company, Toledo, Ohio, recently announced bulletin No. 145, entitled "Roebling Wire Rope for the Oil Fields." The booklet is well illustrated and devotes three pages to the subject of how to select and order wire rope.

**Insulation**

Johns-Manville, 22 East 40th Street, New York, announces the publication of a new 32-page catalog, entitled "Johns-Manville Insulation," which contains specific information on all sheet, block and pipe insulations which the company has developed. An added feature of this catalog is a section dealing with JM-20 insulating brick, a new product placed on the market this year.

**Pipe Fittings**

Bonney Forge & Tool Works, Forged Fittings Division, Allentown, Pennsylvania, has just issued a new bulletin WT23, fully illustrating and describing WeldOlets and ThreadOlets, the patented, drop-forged pipe fittings for making branch pipe connections by welding.

The manufacturer claims that by using these fittings, branch lines may be taken off the main pipe without any cutting, threading or fitting of the main line, either before or after it is in positon.

No specal training is needed for their installaton—any welder of average experience being able to do a first-class job with the assurance of obtaining leak-proof joints.

They are suitable for use in all types of piping installations, either inside or outside, being especially adapted for use as radiator take-offs, for header construction in heating systems, in power plants, oil refineries and welded plumbing systems, etc.

**Generator**

Oil Well Supply Company, Oil City, Pennsylvania, recently published bulletin No. 175, describing in detail the portable superheated steam generator for 350 pounds working pressure.

# Squeaks from the Bull Wheel

### Reconciled

"Are you and your wife on speaking terms?"

"Well, I'm listening again."

### Poor Father

A visitor asked little Audrey, aged five, which member of the family she liked best.

"Mother," said the child.

"And next best?"

"Little brother."

"And then?"

"Aunty."

Father thought this was going a bit too far, and so he had to ask:

"Well, Audrey dear, when do I come in?"

Quick as lightning came the reply:

"At two o'clock in the morning."

### Big Coward

"How'd you get along with your wife in that fight the other night?"

"Aw, she came crawling to me on her knees."

"Yeah? What did she say?"

"Come out from under that bed, you coward!"

### Johnnie Knows

"What makes the radio squeak so, Johnnie?"

"Well, mother, if you must know what you call squeaks are really the self-oscillation of the thermionic valves brought about by altering the potentials of the high and low tension batteries and varying the relations of the capacitive and inductive quantities in the receiver."

### To the Point

J. T. Harahan, president of the Illinois Central some years ago was sitting in his office when a burly fellow entered without knocking. "Me name's Casey," he bellowed. "I want a pass to St. Louis. I wur-rk in the yards." Harahan objected: "That's no way to ask for a pass, you should introduce yourself politely. Come in in an hour and try again.

At the end of an hour back came the caller. Doffing his hat, he inquired: "Are yez Mr. Harahan?"

"I am."

"Me name's Patrick Casey. I've been wur-rking in the yards."

"Glad to know you, Mr. Casey. What can I do for you?"

"Yez can go to hell, I've got a job on the Missouri Pacific!"

### Conscript

"Oh, yes; I married a man in the village fire department."

"A volunteer?"

"No, Pa made him!"

### Kid Stuff

"Tommy, since you've visited the zoo, what has horns and is dangerous?"

"Taxicabs."

### By George

"How much is my milk bill?"

"'Scuse me, lady, but my name's Joe."

### Wrong Father

'Tis a fine boy you have there with you, Mike. A magnificent head and noble features. Could you loan me ten?

I could not. 'Tis me wife's child by her first husband.

### The Snag

"Frequent water drinking," said the specialist, "will prevent you from becoming stiff in the joints."

"Yes, but some of the joints don't serve water."

### His Line

"You seem to enjoy the music."

"Well, as a matter of fact, I don't know very much about music; but I'm a great applauder."

### Good Exercise

"For years I have had five minutes wrestling every morning, and I am as fit as a fiddle."

"Whom do you get to wrestle with you?"

"No need for anyone. I have my collars starched well, that's all."

### Seek-And-Ye-Shall-Find System

"Can you type?"

"Well, I use the Columbus system."

"What's that?"

"I discover a key then land on it."

### Found

"The dime novel has gone. I wonder where it's gone to."

"It's gone to two dollars and fifty cents."

### Home Cooking

"Is your husband fond of home cooking?"

"Yes, we are now taking our meals at a restaurant that makes a specialty of it."

### The Reminder

A gentleman visited the house of an old friend where the butler, an Irishman, paid him every attention, and finally saw him into his carriage. The gentleman, who was miserly, did not tip him.

As a delicate reminder, the butler said, "Faith, sorr, if you lose your purse on the way home, remember you didn't pull it out here."

### Missed It

A lawyer whose office was on the sixteenth floor of a skyscraper, was expecting a client from the country. The door finally opened and the client entered, puffing violently.

"Some walk up those stairs!" he gasped.

"Why didn't you ride the elevator?" asked the lawyer.

"I aimed to, but I missed the thing!" was the reply.

### More Scotch

"Mother, what are prayers?"

"Messages to heaven, my dear."

"Then that is why father always says his prayers at night, to get the low rate."


**PETROLEUM DICTIONARY**

*By* **HOLLIS P. PORTER**

***Member of***

***American Society of Mechanical Engineers.***

***American Petroleum Institute.***

**This work grew out of a demand for some source of definition for the terms used by the petroleum industry. It contains over 3,000 definitions of words used constantly by all phases of the petroleum industry. It was published in 1936 and has found its way into engineering departments, legal departments and land departments of producing concerns, as well as to the desks of executives of the petroleum industry.**

**Manufacturers also find it valuable for reference. Advertising agencies find it a valuable addition to the library.**

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| Dixon Valve & Coupling Co. | — |
| Dodge Manufacturing Co. | — |
| David Donoghue | — |
| Dowell Incorporated | — |
| Eastman Oil Well Survey Co. | — |
| Economy Electric Lantern Co. | 91 |
| Elliott Core Drilling Co. | 47 |
| Emsco Derrick & Equipment Co. | — |
| Eureka Tool Co. | — |
| The Fafnir Bearing Co. | — |
| First National Bank, Houston | — |
| First National Bank & Trust Co. of Tulsa | — |
| Edwin H. Fitler Co. | — |
| Fluid Packed Pump Company | 87 |
| Foote Bros. Gear & Machine Corp. | 89 |
| Fort Worth Clearing House Assn. | — |
| The Fort Worth Laboratories | — |
| Franks Manufacturing Corp. | — |
| Frick-Reid Supply Corp. | — |
| Gardner-Denver Co. | — |
| The Garlock Packing Co. | — |
| Gas Lift Corp. | — |
| Gaso Pump & Burner Manufacturing Co. | — |
| General Electric Co. | — |
| General Motors Corp. | 33 |
| General Power Co. | — |
| Geological Scientific Service Co. | 91 |
| Geophysical Service, Inc. | — |
| Globe Oil Tools Co. | — |
| The B. F. Goodrich Co. | — |
| Goodyear Tire & Rubber Co. | 8 |
| H. P. Gott Manufacturing Co. | — |
| Grant Oil Tool Co. | — |
| Gray Tool Co. | — |
| The Guiberson Corp. | 27 |
| Gulf Coast Machine & Supply Co. | — |
| Gulf Envelope Co. | — |
| Gulf Publishing Co. | 90 and 97 |
| Gulf States Utilities | — |
| Gustin-Bacon Co. | — |
| Halliburton Oil Well Cementing Co. | — |
| Hardway & Cathey | 91 |
| Harrisburg Steel Corp. | — |
| Harnischfeger Corp. | — |
| Haynes Stellite Co. | 49 |
| Hazard Wire Rope Division | Third Cover |
| C. M. Heeter, Sons & Co. | — |
| Hercules Tool Co. | First Cover |
| Hewitt Rubber Corp. | — |
| Hinderliter Tool Co. | — |
| Hoard Explosion Co. | — |
| The Chas. N. Hough Manufacturing Co. | — |
| Houston Ready-Cut House Co. | — |
| Hughes Tool Co. | — |
| Humble Oil & Refining Co. | — |
| Hunt Tool Co. | — |
| Hyatt Bearings Division | 33 |
| Ideal Bailer Co. | — |
| Independent Exploration Co. | — |
| The Inferno Co. | 96 |
| Ingersoll-Rand Co. | — |
| International Derrick & Equipment Co. | — |
| International Harvester Co. | — |
| The International Nickel Co. | 55 |
| International Petroleum Exposition | — |
| International Supply Co. | — |
| Byron Jackson Co. | 39 |
| Jarecki Manufacturing Co. | 56 |
| Jeffrey Manufacturing Co. | — |
| Jensen Brothers Manufacturing Co. | — |
| Johns-Manville | — |
| M. O. Johnston Oil Field Service Corp. | — |
| The S. M. Jones Co. | 4 |
| Jones & Laughlin Steel Corp. | Second Cover |
| J. & S. Carburetor Co. | — |
| The Kennedy Valve Manufacturing Co. | — |
| Kerotest Manufacturing Co. | — |
| Kibele Manufacturing Co. | — |
| Kinzbach Tool Co. | — |
| Koppers Co. | — |
| Landis Machine Co. | — |
| Larkin Packer Co. | — |
| The Layne & Bowler Co. | — |
| Lee Rubber & Tire Corp. | — |
| LeRoi Co. | — |
| A. Leschen & Sons Rope Co. | — |
| The Lincoln Electric Co. | — |
| Link Belt Co. | — |
| Lone Star Cement Corp. | — |
| Lucey Boiler & Manufacturing Co. | — |
| Neal Lucey Co. | — |
| Ludlow Valve Manufacturing Co. | 94 |
| Lufkin Foundry & Machine Co. | — |
| MacClatchie Manufacturing Co. | — |
| Maintenance Engineering Corp. | — |
| D. S. Mair Machinery Corp. | — |
| Maloney Tank Manufacturing Co. | — |
| Manhattan Rubber Division | — |
| F. G. Masquelette & Co. | — |
| Martin-Decker Corp. | — |
| The Medart Co. | — |
| Merco Nordstrom Valve Co. | — |
| Metric Metal Works | — |
| Miller Sand Pump Co. | — |
| Mission Manufacturing Co. | — |
| Monroe & Lemann | 6 |
| Lee C. Moore & Co. | — |
| National Bank of Tulsa | — |
| The National Supply Co. | 25 |
| National Tube Co. | — |
| Naylor Pipe Co. | — |
| The New Deal Specialty Co. | — |
| Norvell-Wilder Supply Co. | — |
| Walter O'Bannon Co. | — |
| O.C.S. Manufacturing Co. | — |
| Oil Center Tool Co. | — |
| Oil City Brass Works | — |
| Oil Well Supply Co. | — |
| Osage Metal Co. | — |
| Otis Pressure Control, Inc. | — |
| Page Steel & Wire Division | — |
| The Parkersburg Rig & Reel Co. | — |
| Patterson-Ballagh Corp. | — |
| Pelican Well Tool & Supply Co. | 81 |
| Petroleum Electric Power Club | 45 |
| Petroleum Rectifying Co. of California | 37 |
| Petty Geophysical Engineering Co. | — |
| Hotel Philadelphian | 91 |
| Pittsburgh Equitable Meter Co. | — |
| Pittsburgh Steel Co. | — |
| Plowden Supply Co. | — |
| Preformed Wire Rope | — |
| R-F Electrical Manufacturing Co. | — |
| Reading-Pratt & Cady Co. | — |
| Rector Well Equipment Co. | — |
| Reed Roller Bit Co. | — |
| The Republic Rubber Division | — |
| Republic Steel Corp. | — |
| The Rice Hotel | — |
| Rieber Laboratories | — |
| The Ridge Tool Co. | — |
| Rollway Bearing Co. | — |
| Royal Manufacturing Co. | — |
| Ryder Scott Co. | — |
| San Jacinto Inn | — |
| Jack A. Schley | 91 |
| Schlumberger Well Surveying Corp. | — |
| Security Engineering Co. | — |
| Seismograph Service Corp. | — |
| Shaffer Specialty Co. | — |
| Shaffer Tool Works | — |
| Shell | — |
| Sinclair Refining Co. | — |
| SKF Industries, Inc. | — |
| A. O. Smith Corp. | 42-43 |
| E. M. Smith Co. | 6 |
| Howard Smith Co. | — |
| South Chester Tube Co. | — |
| Southern Engine & Pump Co. | — |
| Southern Pacific Lines | — |
| Spang & Co. | — |
| Spang, Chalfant & Co. | — |
| Sperry-Sun Well Surveying Co. | — |
| Standard Pressed Steel Co. | — |
| Stanley Tools | — |
| Star Drilling Machine Co. | — |
| Stevens Hotel | — |
| Sullivan Machinery Co. | — |
| Templeton, Kenly & Co. | — |
| Texaco Development Corp. | — |
| Texas Electric Service Co. | — |
| Texas Electric Steel Casting Co. | — |
| Texas Iron Works | — |
| Texas Steel Co. | — |
| Thermoid Rubber Co. | — |
| Thornhill-Craver Co. | — |
| Thornton Tandem Co. | — |
| The Timken Roller Bearing Co. | 21 |
| The Titusville Iron Works Co. | — |
| Tretolite Co. | — |
| Trimont Manufacturing Co. | — |
| Trinity Portland Cement Co. | — |
| Twin Disc Clutch Co. | — |
| Union Carbide & Carbon Corp. | 49 |
| Union Wire Rope Co. | — |
| Unit Rig & Equipment Co. | — |
| United Gas System | — |
| United States Heat Treating Co. | — |
| United States Rubber Co. | — |
| United States Steel Corp. | 63 |
| United Supply & Manufacturing Co. | — |
| Universal Atlas Cement Co. | — |
| Wailes Dove-Hermiston Corp. | — |
| The Watson-Stillman Co. | — |
| Waukesha Motor Co. | — |
| Westinghouse Electric & Mfg. Co. | — |
| Wheeling Steel Corp. | — |
| The Wheland Co. | 7 |
| Wickwire Spencer Steel Co. | — |
| J. H. Williams & Co. | — |
| K. R. Wilson | 94 |
| Wilson Manufacturing Co. | — |
| Wilson Supply Co. | — |
| W-K-M Co. | — |
| The Wood Shovel & Tool Co. | — |
| Worthington Pump & Machinery Corp. | — |
| Young Engine Corp. | — |
| Young Radiator Corp. | — |
| Youngstown Sheet & Tube Co. | 31 |
| Zingery Oil Map Co. | 91 |